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VOLUME XL, 1933

PUBLISHED BY

The AMERICAN JOURNAL of CLINICAL MEDICINE

NORTH CHICAGO : : : ILLINOIS

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PROGRESS NUMBER

JAN 1 1933

Medical Lib.

JANUARY, 1933

Clinical Medicine and Surgery

VOLUME 40 NUMBER 1

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CLINICAL · MEDICINE
AND · SURGERY

VOL. 40 JANUARY, 1933 No. 1

Dr. W. A. Newman Dorland

IT would seem, off hand, that the only people entitled to be called hundred-percent Americans are the "Noble Red Men"—and the anthropologists are now suggesting that *they* came here from somewhere else—probably from Asia or the lost continent of Atlantis. But if any white men are entitled to this designation, Dr. William Alexander Newman Dorland is certainly one of them, as he is ninth in direct descent from Thomas Rogers, who arrived on the famous "Mayflower"; tenth from John Winthrop, second governor of the Massachusetts Bay Colony; ninth from William Thorne, who settled in Lynn, Mass., in 1636; and seventh from Lambert Janse Dorlandt, New York Colonial assemblyman, who established his home in New Amsterdam in 1663.

The name was later anglicised, and W. A. Newman was born, at Hilton Head, South Carolina, the son of Dr. William Matthews Dorland, a graduate in the first class in medicine of Western Reserve University.

The family later moved to Philadelphia, where the son received his general education in the public schools, graduated as a Master of Arts from the West Philadelphia Academy and took his degree in Medicine from the University of Pennsylvania in 1886, after which he served as an intern and as resident physician in the Philadelphia General Hospital ("Blockley").

Dr. Dorland's connection with medical education began early and has continued until the present time. From 1892 to 1910 he was associate professor of gynecology at the Philadelphia Polyclinic and instructor in obstetrics at the University of Pennsylvania, also occupying the position of chief of the gynecologic clinic at the Pennsylvania Hospital.

In 1910 he moved to Chicago, where, in turn, he was professor of obstetrics at Loyola University and the Chicago College of Medicine and Surgery (the Medical Department of Valparaiso University), and professor of gynecology and obstetrics at the Postgraduate Medical School of Chicago and the Illinois Postgraduate Medical School, which last appointment he still holds.

He also began to establish his reputation as a writer early in his career. In 1896 his "Manual of Obstetrics" and a "Syllabus of Gynecology" first appeared. In 1898 he

laid the foundation of his fame as a medical lexicographer, with the publication of his "American Pocket Medical Dictionary," which has seen fourteen editions, and consolidated it with his "American Illustrated Medical Dictionary" (1900), which has run into sixteen editions. These were followed by "Modern Obstetrics: A Textbook" (1901); "The Age of Mental Virility" (1908); "The Sum of Feminine Achievement" (1917); "The History of the Second Troop, Philadelphia City Cavalry" (1917); "What Billingsgate Thought" (1919); "The X-Rays in Embryology and Obstetrics" (with Dr. M. J. Hubeny—1925—translated into German in 1928); "The Triumph of Maturity" (1927); and "The Battle of the Giants" (1928). In addition to these interestingly varied accomplishments, another book, with Dr. Hubeny's cooperation, "Obstetric and Embryologic Roentgenology," is now in press, and many of his professional and literary contributions have enriched the periodical literature.

Dr. Dorland is a fellow (former vice-president) of the American Academy of Medicine, the College of Physicians of Philadelphia, the American Medical Association and the American College of Surgeons, a member of a long list of professional organizations and a Diplomate of the American Board of Obstetrics and Gynecology.

His interests are not, however, confined to the limits of his specialty or his profession. He has been active in military affairs and in patriotic organizations for years. He was one of the founders and the first surgeon of the Second City Troop of Philadelphia (1897). In 1911 he was commissioned a first lieutenant in the Medical Reserve Corps, U. S. Army, and, with the outbreak of the War, was rapidly promoted to the grade of lieutenant-colonel, filling a number of important assignments in the home territory. He has also been actively associated with the Order of the Founders and Patriots of America (having been treasurer-general of the Order and held office in the Pennsylvania and Illinois societies), with the Society of Colonial Wars, the American Legion and other non-professional organizations.

It is a keen pleasure to introduce Dr. Dorland to the readers of CLINICAL MEDICINE AND SURGERY as a new member of our Editorial Staff, beginning with this issue of the journal. We feel sure that his distinguished abilities will make a definite addition to the practical usefulness and general interest of our pages.

Happy are those who, realizing Infinity, love daily labor.—PROF. NICHOLAS ROERICH.

HELP THE ARMY

WHILE everyone who has ever been a real soldier realizes the horrors of war with the greatest keenness (doctors especially), such people also recognize the extreme danger of unpreparedness and should be ready to do all that lies in their power to combat pacifistic propaganda. All physicians, even those who have not seen military service, should fall in that same class, because they are thinking people.

The new budget will come before the present session of Congress, and tremendous pressure will, very properly, be made to reduce the present unwarrantable cost of the National Government. This praiseworthy effort will be the signal for the various active pacifistic and communistic organizations to clamor for a reduction of the appropriations for the Regular Army and the Reserve Corps. If these cuts are made as they have been suggested, our country will be placed in a deplorable and dangerous condition.

It is true that some reductions in the appropriations could be made with great profit, such as those for the upkeep of strategically unnecessary military posts and navy-yards; but these will not be touched

by the Congress, because they offer possibilities for political pork.

Everyone who believes in adequate preparedness and in the relatively inexpensive citizen army provided by the Officers' Reserve Corps, the R.O.T.C. and the C.M.T.C., can do something to help *right now.*

Sit down *at once* and write to your senators and representatives in the Congress, urging them not to permit the already dangerously reduced army and navy appropriations to be further depleted, except as regards the reductions made possible by the abandonment of useless stations, which are now maintained solely as avenues for political patronage. Having done this, you can rest in the satisfying knowledge of having discharged an important duty as a citizen.

The Appendicitis Death Rate

WE American physicians and surgeons tend to think of ourselves as about the best in the world; and while, in a number of particulars, there is a rather sound basis for such an opinion, certain facts, if honestly faced, are bound to jolt our self-complacency. One of these is our mortality from appendicitis.

The death rate in the United States, from this exceedingly common disease, was decidedly higher in 1931 than it was in 1910 (17.4 and 13.3 per 100,000 of population, respectively), and for the past ten years has remained practically stationary at about 18 per 100,000. Contrasted with this, 64 foreign cities showed a rate of only 8 per 100,000. Osaka, Japan, a city larger than Detroit (which had a figure of 17.8), had only 4.4, and Rio de Janeiro, Brazil (also larger than Detroit), 4.9. Some of our smaller cities showed lower rates, to bring down the average, but all those of over a million population reported rates about three times as high as these metropolitan centers in what we sometimes think of as "backward nations."

Investigations have shown that a reduction of the time between the onset of symptoms and the operation will produce a numerically proportional reduction in the deathrate from appendicitis.

In view of these facts, it would appear that the shame of our high mortality is probably due to one or both of two causes: Either, because of its frequency and the relative simplicity, as a rule, of the curative operation, we have come to look upon appendectomy with a certain degree of surgical contempt, or we are failing in our duty to educate the public as to the dangers of delays and purgatives, in cases of acute abdominal disorders.

No surgeon is fully fitted to perform an appendectomy, who is not capable of doing any of the possible operations upon the intestinal tract, for, in that "simple" operation, one may be confronted with conditions which will tax the surgical resources of the most experienced and skillful operator. In pressing emergencies, when and where expert surgical help is not within reach, *any* physician is justified in doing an appendectomy, but *not otherwise.* No laparotomy is a job for a tyro.

In our function as educators of the public, most medical men are deplorably lax. The old taboo upon "advertising" holds many in superstitious fear and almost criminal silence, when their knowledge should be spread abroad, where those who need it can find and make use of it.

Only when we take appendicitis seriously (but without morbid fear), so that we will study and correct the errors and deficiencies in our personal and hospital technics: Only when we have familiarized ourselves with the facts which are known about this disease, and passed on to the lay public such parts of our knowledge as they are qualified to use, will be doing our full duty in this matter, and thus earning the right to see our mortality statistics compare favorably with those of Hong Kong, Amsterdam, Milan, Moscow or Mexico City.

PROGRESS IN THE SCIENCE AND ART OF MEDICINE—1932

THE beginning of a new calendar year is a satisfactory time to look back and take a hasty inventory of what the past twelve months or more have brought forth in the way of new ideas in the field of medical science and art, and this is an attempt to outline such a survey, from one man's viewpoint. Opinions as to the importance of various matters may differ somewhat, according to one's personal or professional bias or line of work and study, but this brief sketch is based upon a rather wide consideration of the medical literature during the past year and is believed to be fundamentally sound.

General Research

In its clinical implications, there has probably been nothing, during the past year, more important than the report that oil from the liver of the halibut **(Haliver oil)** is 100 times or more as rich in vitamins A and D as is the old standby, cod-liver oil, and the commercial preparation of this substance by several pharmaceutical houses. It is now possible to administer these important food adjuncts in a form that is acceptable to the most sensitive patients.

Studies of these two **vitamins** have made considerable progress during the year, and are discussed in a leading article in this issue. Other vitamins, also, are being actively studied, but a discussion of their present status seems a bit premature at this time. It is, further, being suggested that vitamin insufficiencies may have some bearing upon hay-fever and other allergic conditions.

Our ideas of **bacteriology** and **immunology** are in a more complete state of flux than ever before. The discovery of the pleomorphism of the tubercle bacillus and one or two other organisms has stimulated research which tends to suggest that many other organisms also possess this property, that many of the common bacteria may exist in the form of socalled filterable viruses and that they may also change their pathogenic properties, as well as their forms. Under laboratory conditions, capsulated bacteria, such as the pneumococcus, have been deprived of their capsules, which have been "grafted" upon naked organisms.

This confusion in a previously stabilized field of scientific thought suggests the desirability of making more detailed studies of the *patients* in whom disease occurs, rather than devoting all or most of our attention to the microscopic invaders which are supposed to cause the diseases.

Liver extract (some of it from the livers of horses) has been prepared in a form suitable for parenteral administration, and is being used for conditions other than pernicious and other anemias, notably after operations, for the general, clinical stimulation of the body's defenses.

The maggot treatment of osteomyelitis is being more fully standardized and popularized and is being extended in other chronic surgical conditions. Efforts, which give promise of interesting results, are being made to isolate an active principle from these larvae or to discover some chemical substance which will produce the same effect.

A new **tuberculin** has been announced, prepared by a standardized process from the unaltered proteins of various acid-fast bacilli and known as MA100, the human form of which seems to be more sensitive for skin testing, and far safer, than Koch's Old Tuberculin. This should increase the use of this important test.

In other divisions of the **tuberculosis** field, many changes appear. The emphasis is now being laid more upon contacts than upon actual patients; the roentgenogram

is largely replacing the stethoscope, for early diagnosis, and a method has been evolved for using this resource on a mass-production basis, at minimum expense; **pulmonary collapse therapy** is coming to be recognized as almost a specific in the treatment of many cases of this disease; and we are awakening to the fact that tuberculosis in children is practically a different disease from that called by the same name in adults, and are beginning to govern ourselves accordingly.

An **intradermal test for cancer** has been introduced, using an antigen made from the organs of embryonic animals. The experiments so far reported appear decidedly encouraging as to its specificity.

Active work in endocrinology has been done during the past year, and many important discoveries have been made. These are fully discussed in a leading article in this issue.

Advances in surgery have been chiefly in the direction of improving anesthesia, particularly with the local anesthetics, and in more intelligent and individualized preoperative and postoperative care. Crile's operation of **adrenal denervation** seems to be justifying itself in cases where it is indicated. *Electro-surgery*, especially with the "radio-knife," is taking a larger and more important place in operative technic.

A mobile, shock-proof (oil-immersed) x-ray unit has recently been introduced, which appears to be safe and suitable for general office practice and should extend the field of this indispensable diagnostic resource. It should not, however, be forgotten that special training is required to enable one to interpret a roentgenogram intelligently.

Therapeutics

One of the most significant recent therapeutic advances is the increasing use of vitamin A (particularly abundant in plain Haliver oil) as a protective or prophylactic against infections, especially those of the respiratory tract. Other vitamins are also being used more and more widely, if not always intelligently.

Pentobarbital sodium **(Nembutal)** and other barbiturates have recently been recommended in the treatment of **strychnine poisoning,** which is a decidedly common condition.

Acetarsone, which has now been used for several years, by mouth, in the treatment of certain cases of syphilis and in amebic dysentery, lambliasis and *Plasmodium vivax* malaria, is now being employed with success, in the form of its sodium salt, as an intravenous remedy in **paresis.**

A safe, powerful and promptly-acting parenteral depressor, antithetic to epinephrin, has recently appeared as *acetylcholine.*

The occasional necessity for a salt-free diet has long been recognized, but most patients rebel against it because of the insipidity of unsalted food. Several salt substitutes have previously been offered, but have had drawbacks. **Hosal** (with the addition of bromine, where a sedative action is desired, as Bromhosal) seems to come nearer than anything heretofore available to giving the taste of salt without its undesirable properties.

Disturbances in the permeability of the cells of the brain has recently been suggested and defended as the cause of **the epilepsies,** which seem to be favorably influenced by adjustment of the body's water balance, brought about by restricting the intake of fluids.

The ultrashort, "quasi-optical" rays of the spectrum are now being used in therapeutics. Other advances in physical medicine appear to be chiefly in the line of more scientifically standardized employment of the well known agencies and in the elimination of unnecessary and ineffective apparatus.

Economics

There has never been a period in the history of the medical profession when the economic outlook was more critical than it is at present. The organized forces of socialistic and communistic opinion, with the help of plain ignorance and selfishness, have brought the physicians of America nearer to State Medicine than they have ever been before. If we do not wish to become the slaves of a political bureaucracy, ignorant, at best, and at worst thoroughly corrupt, it is time that we manifested a spirit of cooperation and solidarity which the profession has never shown heretofore.

Various types of group practice and social insurance, some showing promise of sound progress and some obviously unwholesome and disastrous, are now being tried in various parts of the country. These should be watched with the greatest care, so that any truly helpful and constructive ideas which are developed may be used promptly and widely, and any destructive and subversive features can be eliminated without delay or temporizing.

The final report of the Committee on the Costs of Medical Care is about to come off the press as this is written. This seems to be a highly controversial document, and will be fully commented upon in these pages, as promptly, straightforwardly and helpfully as is possible.

We must learn to adjust our professional activities on a level with the decreased incomes of the people who make up the medical clienteles, because it will probably be several years before this country sees "flush times" again—several *generations*, perhaps, unless more statesmanship and less selfishness are shown in our Government than have recently been visible. And we must make these adjustments without lowering (but rather raising) the quality of our professional ministrations. Most of the hospitals seem disposed to help in these endeavors.

Many fascinating pathways of progress have been opened during the past year, which the medical profession will, no doubt, follow during the coming year with large profit to all concerned, providing it is not hamstrung by disastrous socialistic experiments.

The plain fact remains that men, the world over, possess amounts of resources which only very exceptional individuals push to their extremes of use
—William James

Power and Purpose

IF one pours a handful of gunpowder on the ground and ignites it, there will be a brief flash, harmless except, perhaps, to the person who touches it off, and that is all. No work will be done.

If the same powder is confined in a rifle cartridge, with a bullet in front of it and the barrel of the piece in front of the bullet to direct its course, it may, if aimed in the necessary direction, cut short a useful career or precipitate a great war, without doing any immediate physical harm to the man who fires the rifle.

This is a homely illustration of the difference between power operating without and with purpose. Any youngster of five can touch off a pile of gunpowder in the street; but it took much thought and labor to conceive and produce the modern methods of confining and using this power for a definite purpose, constructive or destructive.

A great many people seem to be vastly concerned about the present distressing plight of the Western races, particularly the United States, and specifically certain more or less limited sections of the population. Most of these individuals, having no definite objectives in what they mistake for their minds, explode all over the place in puffs of words which consist of about ninety-nine percent heat and one percent light. If the energy they waste could be confined and directed, it might blow the side off a mountain or put an end to the promulgators of a grave abuse.

Power is what moves the universe; but,

uncontrolled and undirected, it is, at best, useless, and, at worst, highly dangerous to the man who generates or releases it.

What most of us need most urgently is *purpose*—a clearly-seen goal of effort—in the use of the power we all possess, more or less. If we would spend half the time in real, constructive *thinking* that we waste in "sounding off," or half the effort in finding ways to cooperate with our fellows toward a common end, that we throw away in confusing and damning them and asserting our own "rights," we could "remold this sorry scheme of things nearer to our hearts' desire" before next summer.

A man's endowments, however godlike, merely fix the measure of his duty.—EDWARD BELLAMY.

MEDICAL COSTS AND SOCIALISM

THE collective mountain, known as the Committee on the Costs of Medical Care, after a protracted and not very effectual labor lasting for five years, has brought forth a socialistic mouse, called "Medical Care for the American People," whose paternity is vigorously repudiated by an influential section of its putative parents.

At the head of this Committee was Dr. Ray Lyman Wilbur, Sceretary of the Interior, who assisted so directly and effectively in the procurement of the notorious Coffey-Humber patent on a "cancer cure" (as set forth on page 165 of our March, 1931, issue), and among his associates were several laymen with pronounced socialistic ideas, which they seem to have hesitated to apply to their own lines of business, but which they appear eager to foist upon the medical profession. Notable among these is an engineer named Cooke, who seems to see, in the majority report, a chance to sell his services to some of the "groups" there recommended, and pays his left-handed respects to the "organized medical bureaucracy which seeks to impose its self-interested will upon the people."

Briefly and pertinently, the majority report recommends: That medical service be rendered by groups of physicians, dentists, nurses, pharmacists, etc., organized around hospitals; that public health services be extended to include everybody; and that medical costs be paid by insurance and taxation (this is thinly veiled State Medicine). There are other recommendations which are more or less innocuous and, when constructive, are by no means new. The nub of the thing is group or mass-production practice, supplemented or supplanted by extended public health services(for which all are taxed) and paid for by means of social insurance, part or all of which will ultimately be paid for by taxation and administered by pork-barrel politicians.

Those who have followed the partial reports of the Committee, which have been published from time to time, will readily recognize that the examples of contract and quasi-socialistic medical practice which were studied, were carefully selected to show the best aspects of a system which appears to have fitted the preconceived notions of a number of the members of the Committee, rather than taking a fair cross-section of the large number of such experiments which are now being carried on, most of them unsuccessfully.

As a matter of fact, the basic schemes proposed by the Committee have already been tried, in this and other countries, and, where fully carried out, have always failed of the hoped-for success, sometimes disastrously.

One of the places where such experiments have been tried extensively is England. The *Lancet* (London), always conservative and guarded in its statements, in its issue of November 19, 1932, comments on these experiments, remarking that, in 1930, the British Medical Association was ready to adopt a widely extended system of medical insurance, but "the situation is now very different from what it was two years ago. Excessive claims for sickness benefits and the abnormal burdens falling

upon the unemployment insurance funds (another socialistic undertaking.—Ed.) have cast doubt upon the soundness of the whole idea of social insurance, both from the economic and the moral standpoint."

Fortunately for American Medicine, these opinions did not go forth unchallenged by an influential group within the Committee. A minority report (in fact, two of them and two personal statements), dissenting vigorously from the methods and findings of the majority, was filed. In the chief of these reports, the fallacies in the investigations and conclusions of the majority, are pointed out, and the disadvantages, to both the public and the physicians, are made clear.

Under such a plan as that recommended, individual touch with and responsibility between physician and patient would be lost; personal initiative and ambition would be destroyed; physicians would be under the control of politicians, who have, to say the least, given no convincing evidence of their intelligence or altruism; and, in the end, the costs of medical care would not be diminished, but *increased* by the sum which would be required to finance the new bureaucratic organization which would be developed to administer the socialized medical structure and to furnish the interested politicians with a satisfactory amount of graft.

It may be that our present system of government is all wrong and that we will eventually have to come to that despotism of the proletarian leaders toward which the communistic agitators are attempting to lure or drive us. If so, Medicine will go down, with all our other institutions, in the final debacle. But the separate socialization of Medicine can be prevented if the independent and thoughtful physicians of the United States will stand squarely with the hardy minority that refused to be steamrolled by the majority which, according to the *Philadelphia Record*, has "succeeded only in out-Wickershamming the Wickershammers."

The methods for organizing ourselves to prevent the Russianization of our profession and to preserve our individual and professional freedom, are matters which should receive prompt formal and informal discussion and decisive action in every county and state medical society in the land.

Let us face the issue frankly. If we lose our independence, it will be solely or chiefly the result of our own laziness, stupidity and petty, selfish jealousies and heartburnings.

LEADING · ARTICLES

Recent Knowledge of Vitamins A and D

By D. L. Tabern, Ph.D., Lake Bluff, Ill.

THERE has been accumulating, during the past three years, largely from the clinical side, a most interesting group of observations regarding vitamin A, and likewise its fat-soluble companion, vitamin D. It is worthy of note that much of the practical significance of these observations lies in fields but faintly indicated by earlier work upon experimental animals.

From the chemical side, we have learned much regarding the properties and reactions of vitamins A and D during this same period. Following the pioneer studies of Steenbock and Hess, which indicated that vitamin D could be secured from ergosterol by irradiation with ultraviolet rays, pharmaceutical progress has been rapid, so that there are available on the market, today, five brands of carefully standardized "Viosterol"; that is, vitamin D in vegetable oil solution, having an activity 250 times that of N.N.R. cod-liver oil (250 D).

In Europe the matter has been carried a step further and the biologically active fraction isolated from the irradiation mixture in crystalline form. An English group, headed by Bourdillon, has termed these crystals Calciferol;* they seem to be very similar to, if not identical with, the D_2 fraction reported about the same time by Windaus and his associates, in Germany. It is of interest that the crystalline vitamin D has essentially the same ratio between efficiency and toxicity as the irradiation mixture, and hence there would seem to be little to be said for its isolation in pharmaceutical practice.

*Angus, Askew, Bourdillon, Bruce, Callow, Fischman, Philpot and Webster. *Proc. Roy. Soc.* B 108: 340-59 (757), 1931.

The close correlation between the presence of **carotene** and the vitamin A activity of food products was likewise observed some years ago by Steenbock, but because of the chemical instability of carotene when dissolved in oils in the absence of natural antioxidants, the definite relationship has only recently been established, notably through the work of Heilbron, Morton, Drummond and Moore, in England, and of Karrer, Euler and Hellstrom, upon the continent.

Olcott and Mattill (*J. Biol. Chem.*, 1931, 93: 59) have claimed that carotene, a highly unsaturated, complex alcohol, can be converted by the hepatic enzyme activity of at least certain animal organisms into colorless vitamin A, which is largely stored in the liver. Drummond (*J. Roy. Soc. Arts*, 4163, Vol. 130, 1932, pp. 949, 959, 974) has repeatedly failed to obtain evidence of such a transformation. At any rate, the efficiency of this conversion is not established. Within the past few months one such oil solution of carotene has appeared upon the market.

Fish-Liver Oils

The use of cod-liver oil as a source of vitamins A and D had such a historical background, and this oil seemed so rich in comparison with other known sources, that until comparatively recently, little effort was made to examine other liver oils and marine products.

It has now been found that **halibut-liver oil,** for instance, is 125 to 250 times as rich in vitamin A and 20 times as rich in D, as cod-liver oil (private communication). Abroad, Heilbron and his associates have utilized this oil for the

preparation of particularly rich concentrates, so effective that 0.001 mgm. per rat per day proved sufficient as a source of vitamin A (*J. Soc. Chem. Ind.* 51: 164, Feb. 19, 1932). Special processes of extraction are necessary, but, once isolated, halibut-liver oil is, of itself, more potent than many of the socalled "cod-liver oil concentrates," and has the added advantage of being in the natural oil solution, in the presence of the natural preservative antioxidants.

It is to be particularly noticed that, in liver oils, vitamin A exists as such, and not in the form of the "pro-vitamin," carotene. While it is known that certain herbivorous animals, such as the rat and the cow, can convert carotene to vitamin A, it has been stated that a typical carniverous animal, the cat, cannot do so. Until adequate experimentation upon human beings has demonstrated the power of the human body, in health and disease, to carry out this conversion adequately, the clinical use of carotene solutions can hardly be looked upon with favor.

Perhaps, in this connection, a further digression would be permitted to note the effectiveness of the fat-soluble vitamins when supplied in various forms, as recently reported by Hess ("White House Conference on Child Health," Sec. III, p. 157-76), and by Steenbock, Kleitzien and Halpin (*J. Biol. Chem.*, 97: 249, 1932). The former has observed that, while the infant requires only twenty times as much cod-liver oil as the rat to prevent typical rickets, about *sixty* times as much viosterol is necessary. Again, in terms of rat units for each such unit, in the form of activated milk, 1.25 units as cod-liver oil and 5.2 units as viosterol are required. F. T. Mitchell and S. W. Colby (*J.A.M.A.* 99: 1772, 1932) find that, clinically, cod-liver oil is more effective in preventing rickets than viosterol alone.

Carrying the studies further, to chickens, Steenbock and his associates find that, in terms of cod-liver oil, 7.5 to 60 times as many rat units of vitamin D, supplied as irradiated yeast, and 40 to 120 times as many, supplied as viosterol, were required to prevent rickets. Burbot-liver oil, salmon-liver oil (Eliot: *J.A.M.A.* 99: 1772, 1932) and, presumably, other natural fish-liver oils, had the same relative effectiveness as cod-liver oil.

No doubt, these surprising variations are associated with inherent variations of biologic assay, with differing natural food sources of the different species and, perhaps of more importance, with the efficiency of absorption and utilization.

There would seem to be necessity, on the basis of these facts, for caution in proposing and utilizing concentrates and artificially prepared vitamin A and D solutions other than viosterol until there is ample evidence of their clinical efficiency in the human organism.

Xerophthalmia and Mucous Membrane Changes

As is well known, the classical symptom, displayed by experimental animals upon a vitamin A-deficient diet, is xerophthalmia or developed blindness. The somewhat analogous condition in human beings, nyctalopia or night blindness, was treated, as long ago as the time of Hippocrates, by the use of liver and other substances which we now know to be rich in vitamin A. It has been observed among groups living for long periods upon very vitamin-poor diets, as has occasionally been true in Russia and Japan. Another interesting example was Denmark, during the War, when butter was exported and a portion of the population employed the vitamin-free animal fats. In modern clinical practice, however, nyctalopia and xerophthalmia, are rare occurrences; nearly everyone apparently receives enough vitamin A to prevent them. However, it is not safe to conclude, on this basis, that the average vitamin A intake even approaches the optimum value.

The changes of xerophthalmia are epithelial in nature and are not limited to the eyes, but involve the epithelium in various parts of the respiratory, alimentary and genitourinary tracts. As early as 1919, Mellanby (*J.A.M.A.* 96: 329) observed that animals on diets deficient in vitamin A often died of broncho-pneumonia, even when vitamin D was supplied in abundance; similar findings were reported in human cases by Black, Ross and others. Green and Mellanby (*Brit. J. Exp. Path.* 11: 81, 1930) placed young rats on diets deficient in vitamin A, and then added definite quantities of carotene. The results demonstrated that the carotene possessed specific anti-infective action, in direct proportion to the amount added to the diet, from 0.08 to 0.16 mgm. completely preventing infection.

The same authors studied the effect of vitamin A treatment upon established puerperal septicemia. In a series of 14 cases, with 22 controls, the mortality rate was reduced from 92 to 28.6 percent. Employing vitamin A concentrates and vitamin D during the later weeks of pregnancy, in 275 cases, Green, Pindar, Davis and Mellanby reduced the incidence of morbidity from 9.7 to 1.1 percent.

Ellison (*Brit. Med. J.*, Oct. 15, 1932, p. 700) has treated a series of 300 cases of measles with massive doses of vitamins A and D. He succeeded in decreasing the death rate from 8.7 to 3.7 percent, as compared with 300 controls. There was a similar decrease in the pneumonia death rate, but none upon the incidence of middle ear infection.

Donaldson, in 200 cases of pneumonia treated with large amounts of vitamin A, observed a mortality rate of 8 percent as compared with 13 percent for 100 controls. Many other data now support the belief that pronounced vitamin A deficiency definitely lowers the resistance of the natural defenses of the epithelial layers to bacterial invasion; whether vitamin A can act as an "anti-infective" agent, once the barrier of the mucous membrane has been passed, is not as yet entirely clear.

Vitamin A Values

Very recently, there have appeared in the *Lancet* (London) five extremely interesting articles,* approaching the matter from a somewhat different angle. Since the liver serves as the storage place of vitamin A in the body, a determination of the amount present, through the assay of postmortem samples, should give an approximation of the vitamin A reserve of the individual. When enough data have been secured from normal individuals who have met accidental death, a "normal" value may be established, and this compared with that found to be characteristic for various pathologic conditions or states of life.

In each case, representative samples of liver were ground, extracted, and the amounts of vitamin A determined quantitatively, in terms of "Blue Units," following reaction with antimony trichloride. While probably sufficiently accurate for the purpose, it should be remembered that the "blue" value may not be quantitatively equivalent to the vitamin A content.

On the basis of the accident cases, it may be assumed that the average normal vitamin A level is about 245 "Blue Units"; in acute diseases, this drops to an average of 225 and in chronic diseases to 206. Considering the "normals," again it is observed that 17 percent have values below 100. While this serves to indicate that wide variations do occur without observable pathologic changes, it may also be interpreted to show that this percentage of the population (of the Netherlands) has a deficient supply (and presumably intake) of vitamin A.

In three cases of enteric fever and six of liver cirrhosis, they found values of only 11 and 71 "Blue Units," respectively; in syphilis, of 102 (33 cases) and in bronchiectasis of 108. In other words, there seems to be a close correlation between a deficiency of vitamin A and the presence of bacterial invasion. The evidence presented here does not allow us to decide whether the avitaminosis is the cause or the result of the infection.

Harris, Innes and Griffith, employing rats as experimental animals, conclude that the incidence of infection is always preceded by keratinization of epithelial tissues, primary infection taking place in the neighborhood of the epithelial change. They furthermore find that little, if any, resistance to massive general tuberculous infection is conferred in rats by vitamin A. On the other hand, if the initial infection had not become too deep seated, administration of vitamin A usually resulted in return of the epithelium to normal and a concurrent reduction of the infection.

Another interesting point in the work of Wolff is that infants, whether born prematurely or at term, average only 70 "Blue Units" per gram of liver. The early administration of vitamin A would, therefore, seem to be on a rational footing.

Moore carried on similar experiments in England and arrived at a "medial" value (aimed to exclude wide variations in an occasional unusual case) of 235 "Blue Units." This drops, in diseases of the respiratory tract (pneumonia, bronchitis, etc.), to 145; in urogenital infections to

*Harris, L. J.: Pathogenesis of Avitaminosis A. *Lancet* 2: 614-7, Sept. 17, 1932.
Wolf, L. K.: On the Quantity of Vitamin A Present in the Human Liver. *Lancet* 2: 617-28, Sept. 17, 1932.
Moore, T.: Vitamin-A Reserves of the Human Liver in Health and Disease. *Lancet* 2: 669-74, Sept. 24, 1932.
Green, H. N.: Vitamin A Content of the Liver in Puerperal Sepsis. *Lancet* 2: 723-6, Oct. 1, 1932.
Vitamin-A Reserves in the Human Liver. *Lancet* 2: 743, Oct. 1, 1932.

163; and in septicemia to 65. Somewhat confusing are the low values associated with non-infective heart diseases (38) and organic kidney diseases, (85). Possibly we are dealing here with unrecognized infections, associated with filter-passing viruses. Again, a number of obviously infective cases show vitamin A values considerably higher than normal; that is, abundance of vitamin A alone is not sufficient to protect uniformly against bacterial invasion.

Moore finds the vitamin A reserve of 24 percent of the cases to be inadequate. Of interest are the high values (average 1,300 "Blue Units") observed in diabetes. Here special diets of vegetables containing carotene have led to enormous reserves in nearly every case, without apparent harm to the biologic mechanism.

The work of Green is essentially concerned with the vitamin A content of the liver in puerperal sepsis. The patients were fed two vitamin A concentrates; one a solution of mammalian liver fat in peanut oil and the other an unsaponifiable fraction from a mammalian liver fat. While a large intake of vitamin A, in general, led to storage, this was not always true. One case is cited which received 15,000,000 units, but whose total liver contained only 1,000 units. In the whole 20 cases, the average amount of vitamin A in the liver was less than 15 percent of the amount taken by mouth. Green suggests that this low value is due to failure of the liver cells to incorporate the vitamin before it is destroyed in the liver or passes into the general circulation, where it is rapidly oxidized. (Less than 25 percent of carotene was recovered, 30 minutes after intravenous injection into a rabbit.)

To test the effect of infection upon vitamin A utilization, emulsified concentrates were injected intravenously into rabbits, over a prolonged period. In normal animals, 33 percent was recovered, but in tuberculous rabbits only 5 percent. Apparently, infection may interfere with normal vitamin storage. We apparently have much to learn regarding the absorption and utilization of vitamin A, particularly in such artificial "concentrates."

Brief reference may be made to the paper of Holmes and his associates (*J. Ind. Eng. Chem.* 24: 1058, 1932), as typical of others demonstrating that, in everyday practice, an abundance of fat-soluble vitamins does benefit the health of the individual and reduce the incidence of respiratory tract infections. The number of hours of absence from work per person during the experiment was 12.8, for the cod-liver oil group, and 25.1 for the control series. Again, the members of the vitamin group showed a decrease of 40 percent in lost time while receiving cod-liver oil, as compared with the controls, who were absent 144 percent as many hours during the experiment as during the corresponding period the previous year.

Tentative Conclusions

In considering the mass of accumulated data from various sources, the tentative conclusion would seem justified that the primary "anti-infective" action of vitamin A is through the epithelial system; by maintaining this at optimum vitality, the incidence of bacterial infection is reduced, if not prevented. There is also a curative effect in not-too-far-advanced bacterial invasion, through a similar mechanism. There is a very frequent, extremely low vitamin reserve during chronic and even acute diseases having to do with the heart, the kidney, the lungs and in septicemia. From 16 to 24 percent of the apparently "normal" individuals in Holland and England were found to have what may be considered subnormally, if not dangerously, low stores of vitamin A. An even greater deficiency has been observed in newborn infants.

There is every indication that vitamins A and D work in harmony to reinforce each other. While provitamin A (carotene) and vitamin D (irradiated ergosterol) are clinically effective in sufficient dosage, greatest effectiveness of utilization would seem to be found in vitamin-rich fish-liver oils, alone or fortified with moderate amounts of vitamin D.

Things That Count

Good health, enough to eat and to wear, a place called home, an interesting job, a clear conscience, a few friends to love and a kindly feeling for a world that respects you—these are the things that count, and little else does.—Robert Quillen.

Recent Endocrinologic Progress

By James H. Hutton, M.D., Chicago

THE following pages comprise a brief summation of some of the recent advances in the study of the endocrine secretions, with some effort at indicating the more pressing of the problems still to be solved.

Endocrinology is a comparative newcomer among the important branches of medicine. Its modern development goes back scarcely fifty years, to Brown-Sequard's experiments with the gonads and Pierre Marie's studies of acromegaly. The identification of epinephrin, some thirty years ago, and (1912) Cushing's volume, "The Pituitary Body," were early stimuli to the study. Thyroxin, in 1914, and insulin, in 1922, added impetus, but equally great advances can be listed within the past decade.

There is still, however, a great deal to be learned, particularly in the field of the relationships of the endocrine structures to one another.

When we have found the key to the problem, it is probable that some of our present notions will need revision. The internist will probably need to revise his opinions of some cardiovascular disturbances and hypertension, to include such ductless products as epinephrin, angioxyl and pituitary principles. The surgeon will study the gonads before he takes out a "chronic appendix"; he will think twice before he does a subtotal thyroidectomy in Graves' disease. The dermatologist will consider gonadal and thyroid or pancreatic function in making his diagnoses. The effect of tuberculosis on the adrenal cortex, for instance, as seen in Addison's disease (80 to 90 percent tuberculous) and of mumps and influenza on the gonads or the pituitary, are cases in point.

Progress has been impeded by the technical difficulties of research in endocrinology. It is slow work dealing with unknown substances, only apprehensible by their effects in experimental animals. And often experimental data are not readily nor constantly confirmed in human beings. Again, as in the pituitary, experimental work was unsatisfactory until the hormones were distinguished; hypophysectomy results in a complication of symptoms, which include those arising from deprivation of growth and sex and posterior lobe hormones all together; more recently these effects can be sorted out by hormones.

Progress in endocrinology manifests four general phases, which provide convenient bases of discussion:

1.—A gradual heightening of medical interest in, and acceptance of, the established principles of endocrine procedure, with a further apprehension of the fact that hormones, not glands, are the material of endocrinology.

2.—Diagnostic improvement: (A) Association of additional signs and symptoms with definite endocrine dysfunctions, coupled with the development, in some instances, of new technical procedures; (B) construction of new syndromes of endocrine dysfunction; (C) identification of various long-recognized syndromes as due to endocrine dysfunction.

3.—Physiologic and therapeutic advances, measurable by: (A) Identification of new hormones; (B) isolation of known hormones; (C) establishment of the pharmacodynamics of isolated hormones; (D) new therapeutic procedures, or adaptation to endocrinopathies of old ones.

4.—A clearer apprehension of the lines future study must take.

The Professional Attitude

We find that the reversal in the attitude of the medical profession toward endocrinology takes two forms:

1.—Acceptance of endocrinology generally as an important branch of medicine, on the part of a growing proportion of the profession.

2.—A disposition on the part of experimenters and clinicians in this field to consider endocrine function and endocrinopathies on the basis of individual hormones, rather than on that of glands or glandular structures.

Setting aside the imaginative extravagance of the extremists, on the one hand, and the hostility of the nihilists, on the other, the conservative group of medical men has tentatively accepted the best-substantiated experimental and clinical facts, cautiously applied them in clinical work and made them, when confirmed, part of their armamentarium.

Many of the skeptics have been converted; some of the enthusiasts have been toned down; but it will take the entire weight of organized medical opinion to accomplish this finally. The nihilists will die out, ultimately—with endocrine dysfunction probably contributing to the process.

While endocrinology is still something of a medical pariah and many men pride themselves on their ignorance and disregard of it, hundreds of the more intelligent physicians are taking a serious interest in it, seeking to acquaint themselves with what is definitely known about it.

The practical worker. Another important progressive element is the fact that endocrine workers, research or clinical, have, in many instances, taken the now essential step from the study of ductless glands to the study of hormones. The necessity of this is illustrated by the pituitary: While we considered it one gland, all was chaotic; when we came to the recognition that it produced at least three hormones (growth and sex in the antehypophysis, the polygonal pituitrin in the posterior lobe), order began to emerge and it became possible to distinguish dyscrasias based on disturbance of one or the other.

Diagnostic Advances

Diagnostic progress takes three general forms:

1.—Association of additional signs and symptoms with various endocrine dysfunctions and the development of new technical procedures as a result.

2.—Construction of new syndromes as due to endocrine dysfunction.

3.—Identification of various long-known syndromes as definitely due to endocrine disorder or as due to some specific hormonopathy.

More specifically:

1.—*Symptoms and technic.* This applies particularly to female endocrinology, and the advancement is illustrated graphically in such recent books as Graves' "Female Endocrinology" and Mazer and Goldstein's "Clinical Endocrinology in the Female." Five years ago these books could not have been written. Now we have acquired some definite knowledge of the hormonic interplay in the female functions and have been able to construct a working hypothesis of physiology that puts this mechanism on a much more satisfactory basis than hitherto, with respect to diagnosis and therapy. We know the factors: Prolan A from the antehypophysis; estrin from the ovary; prolan B from the antehypophysis; progestin from the ovaries, in that order, the two first producing ovulation; the others producing either menstruation or gestational changes, according to whether or not impregnation occurs. In pregnancy, we are beginning to appreciate the roles of the corpus luteum, the placenta, estrin and the oxytocic principle from the posthypophysis; we know how important the thyroid and adrenals are.

Out of this knowledge has grown such technical procedures as the various tests for pregnancy: First, the Ascheim-Zondek test; then its various simpler modifications, especially that of Friedman—all laboratory work, which depends on the demonstration of estrual changes in the ovaries of experimental animals, following injections of urine from pregnant women, the hormonic fact being that the antehypophyseal sex hormones are excreted renally in pregnancy. Normal non-pregnant women produce negative results. The Fluhmann test is adaptable to differentiation as between ovarian and pituitary sex hormone insufficiency; it is positive in women amenorrheic because of ovarian failure and negative in pituitary failure, after excluding pregnancy. These tests are also useful as confirmatory evidence of malignant disease.

Then there is the Hogler epinephrin probe test for pregnancy—an office procedure which depends on the demonstration of a vascular spasm in the bladder wall, following application of epinephrin and pressure with a sound.

Two California workers have recently published a report, claiming ability to predict the sex of the unborn infant correctly, in 80 of 85 cases, by another variation of the "rabbit test," demonstrating that the urine of women, tumid with a female infant, will produce sexual maturity in the testicles of immature male rabbits; while that of a male-gravid woman does not produce any change. Unexplainable as yet, the phenomenon obviously depends on a hormonic factor; it was worked out as a result of accidental observation in laboratory work.

It has also been established that the ovary has a close relationship to the gastrointestinal function, and various forms of otherwise-unexplainable abdominal dis-

tress have been relieved with ovarian therapy. Probably involved in this relationship is the galactose tolerance; at any rate, this tolerance is a measure of the adequacy of ovarian function; in the presence of a normal liver, demonstration of a decrease in tolerance indicates ovarian insufficiency. This is the galactose tolerance test. At puberty a girl should tolerate 20 grams without any sugar appearing in the urine. In adult life a woman should tolerate 40 grams. An increase in tolerance accompanies deficiency of the posterior pituitary.

The blood uric acid is increased in deficiency of the antehypophysis, probably of the growth hormone, and there is usually eosinophilia.

Eosinophils are fewer in adrenal or ovarian insufficiency, and the lung volume or vital capacity is usually found to be reduced in thyroid or adrenal failure.

X-ray studies of bone age are important in the diagnosis of hypothyroidism in childhood; bone development is retarded.

2.—*Recognition of new syndromes.* This is particularly true of the hyperactive states of endocrine structures. Cushing recently described pituitary basophilism, due to adenoma of the basophilic (sex hormone) cells of the antehypophysis, and has drawn a remarkably clear picture of this new syndrome, with its plethoric face, protuberant abdomen, thin legs and arms, ecchymotic, marmorate skin, asthenia, susceptibility to infections, amenorrhea or impotence, kyphosis, hypertrichosis, pigmentation, vascular hypertension, etc. One case was relieved with x-rays applied to the pituitary, and the socalled "essential hypertension" associated with it declined. The corresponding acidophilic adenoma (acromegaly) had been recognized many years before.

Hyperparathyroidism is comparatively new. Recognition of the parathyroid function in releasing calcium from the bones made possible the identification of this syndrome, in which overactivity robs the bones of most of their calcium, with muscular weakness, spontaneous fractures, osseous rarefaction, giant-cell bone tumors, pain, renal calculi, etc.

Hyperinsulinism was recognized by the same process, by Seale Harris. Its symptoms of weakness, nervousness and irritability, occurring before meals; coldness and sweating at night; motor aphasia; and disorientation coincided with those following over-dosage with insulin. Previously many such cases had been called epilepsy. This condition is treated by a diabetic regime or by a low-carbohydrate, high-fat diet, with an adequate protein intake.

3.—*Identification of previous syndromes as endocrinopathies.* The various female dyscrasias — amenorrhea, dysmenorrhea, menorrhagia—might be mentioned as illustrating this phase. The Laurence-Biedl-Moon syndrome—obesity, subnormal mentality, genital dystrophy, polydactilism, atypical retinitis pigmentosa, familial occurrence—was first described in 1866. In the past few years, many such cases have been found to respond to pituitary and thyroid therapy; also, the rapidly mounting number of cases of this once-rare disorder indicates the increasing spread of endocrine knowledge. Lisser recently counted 73, which did not include three cases reported by the present writer in the August, 1932, number of CLINICAL MEDICINE AND SURGERY.

Adrenal hemorrhage in the newborn has recently been studied by Gordon, who proved that it can be diagnosed in living patients. He suggests that it be called "pseudo-pneumonia of the newborn," because the symptoms resemble those of pneumonia, but no lung findings are present.

Essential hypertension has recently come to be regarded, in some instances, as a manifestation of endocrine imbalance. The pituitary, thyroid, adrenals and pancreas have all been found involved. Goldzieher recently reported three cases of hypertension and arteriosclerosis cured by removal of adrenomedullary adenomas.

PHYSIOLOGIC AND THERAPEUTIC ADVANCES

Physiologic and therapeutic advances have mainly taken the form of identification and isolation of new hormones. In addition, the pharmacodynamics of various hormones have been charted to varying degrees and, even in the absence of definite known signs of hypofunction, their administration, in some cases, has proved beneficial. Again, old or new procedures have been adapted to the therapy of endocrinopathies.

1.—*New Hormones.* Anselmino and Hoffman recently reported the identification of a fat-metabolism hormone, somewhat similar to the sex hormone, in the antehypophysis. A substance affecting pigmentation has been reported as identified in the pars intermedia.

Ivy and his co-workers have reasoned out a new substance from the duodenum, cholecystokinin, which causes contractions of the gall-bladder.

German and French workers have brought out a pancreatic extract, variously termed **angioxyl,** padutin or kallikrein, which is insulin-free and is reputed to act beneficially in angina pectoris and hypertension not associated with nephritis. A few reports of benefits have been made in the American literature.

More recently, Laughton *et al* have derived a third product from the duodenum (in addition to secretin and cholecystokinin), as yet unnamed, which appears to have considerable influence on carbohydrate metabolism.

McCullagh recently split the testicular hormone into two parts: *androtin,* which prevents loss of secondary sexual characteristics after castration; and *inhibin,* which prevents pituitary changes after castration. This work has not been confirmed, but, if it should be, it may suggest a treatment of prostatic hypertrophy more suitable than surgery.

The placenta has been identified, with a fair degree of certainty, as a source of three active substances: estrin, emmenin (useful in menorrhagia) and a third fraction, useful in dysmenorrhea.

Moore and Gallagher have isolated the testicular hormone. They have recovered it from the testes of various animals, from the urine of males above the age of 10 and from women. They estimate that the amount eliminated in the urine in 24 hours is about equal to that in one pound of testicular tissue.

2.—*Isolation of Known Hormones.* The greatest triumph in this field has been the production of *Antuitrin-S* (Parke-Davis & Co.) and *Follutein* (Squibb), both forms of the pituitary sex hormone, obtained from the urine of pregnant women. At the same time, *Phyrone,* a preparation of the growth hormone, has been put on the market. The new material has not been long in clinical use, but holds great promise.

The isolation of cortin, by Hartman and his associates, some five years ago, and its more recent improvement, have been rather well publicized in the newspapers; its greatest value is in Addison's disease and possibly in lesser degrees of adrenal failure.

Amniotin, Theelol, Theelin and Progynon are standardized preparations of the ovarian estrin which have been recently produced. It is my belief, however, that they must be accepted with reservations, because, although they will produce the experimental vaginal changes claimed for them and have definite value, it is probable that this is not the full extent of the ovarian hormone. Probably the unstandardized ovarian preparations are better in most cases of clinical ovarian insufficiency.

Goldstine and Fogelson are now at work on a preparation from the human placenta. Their only published reports indicate that it is most valuable in functional uterine hemorrhage; but Dr. Goldstine recently told me that they believe its field of usefulness will be much expanded and that they expect soon to produce it in crystalline form.

The parathyroid hormone is also on the market in effective extracts. Liquor pituitarii (posterior lobe) has recently been split into oxytocin (the uterus-contracting factor) and vasopressin (the blood-pressure-raising and anti-diuretic factor).

3.—*Hormonic Pharmacodynamics.* This is an important field in hormonology. Epinephrin's vasoconstrictor properties have long been familiar, but its clinical uses are being daily expanded. Muck's epinephrin probe test in brain injuries and the Hogler pregnancy test are more recent utilizations. Goetsch's epinephrin tests in hyperthyroidism are of value in some cases. Maliner has recently devised a method of magnifying heart sounds with epinephrin, for better identification of murmurs in cardiac conditions.

The parathyroid hormone has been used with benefit in colitis, both mucous and ulcerative, and in other forms of ulcer, as well as in rheumatic and neuritic conditions, in megacolon, in sprue, in epilepsy, in eclampsia, in spastic paralysis, and in several other conditions.

Hemophilia is helped by ovarian therapy.

Bengtson has reported interesting results in alopecia, from pituitary therapy. It has long been known that both pituitary and thyroid, as well as adrenals and gonads, influence hair growth; and one often finds new growth under pituitary therapy, administered without regard for the hair suit.

Insulin has been found valuable in Graves' disease. The antagonism between epinephrin and insulin and between the pituitary growth hormone and insulin have

peculiar aspects, while thyroid can be used to inhibit lactation.

4.—*Therapeutic Procedures.* The new hormones and their uses are, of course, a list of new therapeutic procedures. Transplantations are less frequently done and some other technics have been applied to endocrinopathies, in addition to the oral or hypodermic administration of new and old hormones.

A.—The various testicular transplantations and Steinach's vas ligation operation are more or less familiar, but Stanley has obviated these and anticipated the isolation of the testicular hormone with his implantation technic, by which he injects, under the abdominal skin, a preparation of animal testicular substance.

B.—Low-dosage x-ray therapy is rapidly winning an important place as a means of rousing insufficient glands to normal activity. At the same time, massive roentgen-ray irradiation is utilized more frequently as a substitute for surgery in hyperactive conditions.

C.—As we learn more about the hormonic inter-relationships, we are becoming more cautious about radical procedures. This is especially true in Graves' disease. Once considered purely a hyperthyroidism and an indication for a subtotal thyroidectomy, it is gradually being regarded as a pluriglandular condition. As a result, we are using more x-rays and less scalpel and evolving a medical routine for handling some of these patients, consisting largely of removal of strain from the thyroid and adrenals; while results take longer, one feels better satisfied, in the long run. Crile claims to have relieved recurrent hyperthyroidism, neurocirculatory asthenia, peptic ulcer, etc., with surgical denervation of the adrenals.

Problems Pressing for Solution

Not the least of the advances made in endocrinology is the fact that we are able to direct our efforts, in greater concentration, at more specific phases of the whole subject, especially in the field of the inter-relationships of the hormones. Some of these functions seem to overlap; others are inter-dependent for functional impetus; others seem to act mutually as balance-wheels, keeping each other's activities within normal limits.

1.—*The Pituitary* has a close relationship to several other hormonic sources. Its importance to gonadal growth and function is definitely proved; it is frequently combined in dyscrasias with the thyroid; pituitary basophilism (adenoma of the sex-hormone-producing cells) offers a complication of symptoms which suggest that its over-active hormone produces a corresponding over-activity of thyroid, parathyroids and adrenals, and perhaps other structures; while, at the same time, its socalled "sex hormone," instead of producing sexual hyperfunction or hyperplasia by its over-activity, inexplicably produces impotence and amenorrhea.

2.—*The Thyroid.* The pituitary is a pressing problem; the thyroid is no less so; and the two are closely interwoven. The growth hormone, for instance, is a pituitary product; but tissue differentiation apparently belongs to the thyroid, along with its dominance over the basal metabolism. This emphasizes the fact that thyroid physiology is far from definitely known; thyroxin is almost certainly not its only product. The thymus, also, is often found involved in exophthalmic goiter; and there is reason, furthermore, to suspect the adrenals of an important share in the pathogenesis of this condition.

3.—*Endocrine Influence in Other Systems.* The zones of hormonic potency have already been extended to include such as the mental, nervous, gastrointestinal and cardiovascular systems; but we need specificity here. Pituitary, thyroid and gonads are involved in all these. The adrenals and pancreas (Angioxl or Padutin) are important in cardiovascular mechanics; status lymphaticus is accompanied by a notable deficiency of the cardiovasular system as a whole; the cardiac signs in either hyperthyroidism or hypothyroidism are more or less familiar; the spleen, parathyroids and pituitary, as well as the non-endocrine liver, stomach and bone marrow, have a powerful influence on the chemical constituents of the blood and its cells. And, while the pancreas and duodenum can naturally be expected to be influential in the gastro-intestinal tract, it is now equally well known that the thyroid and gonads are likewise potent therein.

On the psychologic and neurologic sides, endocrine influence is also clinically well established. The sullen, stupid mental retardation of hypothyroidism; the surprising precocity of pituitary (growth) deficiency; the querulous egocentricity of gonadal deficiency, are definite signs. A

whole chapter on endocrinology will be written some day when we have evaluated the endocrine factors in insanity. That they are important in this field is indicated by the results of the few experiments with the pituitary in epilepsy; by the constant finding of signs of various endocrinopathies in dementia precox and other psychoses; by the association of age of onset of many cases with periods of endocrine tension, such as puberty and the menopause; by the hopeful results from a number of studies of and experimental opotherapeutic regimes arranged in various psychiatric institutions, including some by the writer at the Elgin (Ill.) State Hospital. This is an especially important public problem, with respect to the health of the individuals involved and to the state of the taxpayers' pocketbooks. The statistics regarding the high incidence of enlarged thymus in autopsies on criminals are also interesting.

4.—*Carbohydrate Metabolism.* This exemplifies the overlapping of zones of hormonic influence. Insulin is a principal factor; but we suspect, from experimental and clinical evidence, that a hyperactive growth principle from the pituitary and also epinephrin are antagonistic to insulin and will set up glycosuria in the presence of a normal supply of insulin. The posterior pituitary is also involved and apparently some element in the region of the fourth ventricle, while gonadal deficiency has a definite effect toward decreasing the body's galactose tolerance. Laughton's duodenal principle also has some, as yet unidentified, role in carbohydrate metabolism. Six hormonic principles and some hypothalamic center are thus tangled in carbohydrate metabolism—either pro or con—and the beauty-parlor operators are offering obesity-reducing treatments!

5.—*Fat Metabolism.* This last observation takes on additional force when we consider fat metabolism. The pancreas and its insulin are primarily involved; but we know that Anselmino and Hoffman have claimed isolation of a fat-metabolism hormone from the anterior pituitary, and that Schuller-Christian's disease, definitely involving the lipoid metabolism of the body, is accompanied by a preponderance of hypophyseal symptoms.

6.—*Calcium Metabolism.* Here is another instance of overlapping. The parathyroids probably carry most of the burden, but the spleen is also involved, just how we do not know; and Engelbach finds that the calcium status is disturbed in gonadal deficiency.

7.—These are only a few of the queries that might be propounded. They may sound ominous, with respect to the future of endocrinology, but, in my mind, they are more than counterbalanced by the fact that we know, definitely, enough about the individual hormonology of all the important glands to diagnose and treat successfully their dysfunctions, in the majority of cases. What we have still to learn will simply raise the already high percentage of success in carefully studied cases.

Conclusion

In the preceding paragraphs, I have sketched some of the evidences of progress in endocrinology. It is not by any means a complete picture; it touches only some of the high spots. It is scarcely even satisfactory, because of its enforced brevity, but it indicates a little of the ground that has been covered and the direction further progress is apt to take.

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Progress in Tuberculosis Control

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MEDICAL and public health practitioners have contributed considerably to the decline in tuberculosis mortality, which, in 1931, reached a new low level of 67 deaths per 100,000, and promises to find a level of about 60 per 100,000 for the year 1932. This rate places tuberculosis seventh in the mortality lists, in comparison to its position of first place twenty years ago, when it was hailed as "Captain of Men of Death." The following are the factors which are of interest to us in furthering the eradication of this disease:

Prevention

1.—The protection of the public from the open case of tuberculosis, whose sputum teems with tubercle bacilli; especially the protection of children in intimate contact is, I feel, the most important prophylactic factor today. The patient with the caseous pneumonic type of tuberculosis is, in this respect, the most dangerous. Not only should all precautions of segregation and hygiene be practiced in preventing dissemination of infection from such patients, but compression therapy, wherever possible, should be utilized to control the disease process and thus prevent the expulsion of tubercle bacilli.

2.—*Tuberculin testing of cows* and the destruction of those cattle found diseased, combined with careful pasteurization of milk, has, in those communities where these procedures are practiced, almost eradicated bone, joint and glandular tuberculosis. Each year finds an extension of this practice and greater evidence of the benefits derived.

3.—Vaccination with cultures of attenuated tubercle bacilli, promulgated in recent years by Calmette and bearing the name B.C.G. (Bacillus Calmette-Guerin), has been extended, principally in France, to over 300,000 children. Considerable debate continues as to the value of this bile-potato-medium-grown organism as a tuberculosis preventative and the possible dangers to the human host, if its virulence be reestablished prior to, or consequent on, its inoculation.

Childhood Tuberculosis

The term, childhood tuberculosis, is used to describe the diffuse or focal lesions in the lungs and adjacent tracheo-bronchial nodes, that result from a first infection of the pulmonary tissue with the tubercle bacillus. Childhood tuberculosis has been frequently overlooked, because of its usual mild manifestations. It now is being more readily diagnosed because of the attention which has been directed to the cardinal points in its recognition. These cardinal points are:

1.—A history of contact with an open, active case of tuberculosis.

2.—The positive tuberculin reaction, preferably the Mantoux or dermatubin test, in the younger years of life.

3.—Roentgenologic findings pathognomonic of the primary parenchymal involvement, with secondary hilar gland enlargement.

Prognosis in the childhood type of tuberculosis is relatively good, the mortality being higher the younger the child. The fatalities seen in this type of the disease are the result of the rupture of a tuberculous, caseous hilar gland. This, with bronchial aspiration, produces caseous pneumonic tuberculosis, or miliary tuberculosis, when the caseous material is emptied into a blood or lymph vessel. In infancy, the presence of a positive tuberculin reaction usually indicates intimate contact with an individual with open tuberculosis. The source of such infection should be determined and removed before serious consequences develop. This calls for a

careful examination of all the members of the household.

In lactating mothers, who have supposed arrested pulmonary tuberculosis, Maurice L. Blatt suggests that the milk be examined for tubercle bacilli before allowing nursing, inasmuch as tuberculosis in infancy, in some instances, has been traced to this source.

Mass diagnosis of childhood tuberculosis has been given considerable impetus through the development of an apparatus which takes roentgenographs of the chest at a speed of approximately 150 per hour. The photograph of the roentgen exposure is made on a special roll of prepared paper film, which, when developed, indicates pathosis with a degree of accuracy comparable to the ordinary method employed. From a public health standpoint, such work in detecting childhood tuberculosis, and through it the adult source of disease, is an important contribution. The first survey, involving 10,000 children, is being carried on by the Queensboro Tuberculosis and Health Association, of New York City.*

The Adult Type of Pulmonary Tuberculosis

The adult type of disease is usually the result of an exogenous super-infection with tubercle bacilli, separate and distinct from previous childhood tuberculosis.

The most important consideration in a discussion of progress in the handling of pulmonary tuberculosis should center around a classification of this condition. This classification, from a pathologic and clinical basis, should give the practitioner information as to underlying conditions present and be the basis for the prognosis and the criterion for treatment. The present classification, as standardized by the National Tuberculosis Association, is largely based on the extent of the lesion and the symptoms, but does not segregate pathologic types so as to differentiate a tuberculous process which may heal within a few months from one which may persist to the termination of the patient's life or cause that termination. It also does not consider the serious differences that exist between a malignant type of early tuberculosis and a benign type, which latter may be far advanced at its inception, according to the extent of the lesion, and yet clear spontaneously within several months.

George G. Ornstein, David Ulmar, and Leon Dittler have recently given us a classification which I feel is most useful in elucidating these conditions. This classification is primarily pathologic, based on the reaction of the human host to the tubercle bacillus, and indicates four main types which may and do frequently overlap in their occurrence. The extent of lesion is continued, as previously, as is the symptom classification, A, B, and C. The four types are as follows:

1.—*Exudative Tuberculosis*: In this condition hypersensitivity to the tubercle bacillus and its products exists, with an allergic response. The reaction is almost entirely serous and no ensuing necrosis or caseation can be demonstrated clinically. Resorption of the exudate takes place with a fair degree of rapidity (within several weeks to several months), leaving normal lung tissue. Hemoptysis may be present at the onset. There is, however, only slight cough and expectoration, and only a slight or moderate febrile change. It very much resembles epituberculosis.

2.—*Caseous pneumonic tuberculosis*: A massive dose of tubercle bacilli, with a tremendous stimulation of the body cells, results in severe destruction, which involves a portion of a lobe or the complete lung in this condition. Necrosis supervenes and sloughing of the caseous tissue is only controlled by marked scar tissue formation surrounding the area. This is the malignant type of tuberculosis and constitutes approximately 50 percent of all cases. The caseous material contains large numbers of tubercle bacilli, so that extension of the disease occurs, not only to other tissues and organs within the body, but also to contact-susceptible individuals.

3.—*Exudative, productive tuberculosis*: This type may resemble the caseous pneumonic at its onset, but as its course is observed it is noted that resorption of the exudate supervenes and that necrosis and cavity formation do not occur. There is, however, an increase in scar tissue, particularly along the peribronchial tracts. This scar tissue tends to persist after the acute manifestations have subsided. The course here is usually over a period of months. The tendency is for healing.

4.—*Chronic proliferative tuberculosis* is found where the reaction to the super-

*See Clin. Med. and Surg., Aug., 1932, p. 583. —Ed.

infection dose of tubercle bacilli is very slight, and a low grade of fibrosis results, which continues more or less indefinitely, producing a cirrhotic appearance. These patients go on indefinitely, and usually die of concurrent infection or intercurrent disease.

The value in understanding these types of pathosis is that, very frequently, cases of exudative tuberculosis heal almost spontaneously; the physician, of course, maintaining the usual therapeutic regime of rest, fresh air and diet. Many of such patients, subjected to various forms of therapy, have piled up glowing statistics for such treatment, when the ultimate outcome could not have been affected. Especially is this true of those exudative cases where annular shadows have been seen, which shadows were not produced by cavitation, but rather by zones of cellular infiltration in the periphery of the exudate, or by temporary emphysematous blebs. The same is also practically true of the exudative productive types. The caseous pneumonic type should be given the benefit of immediate attention as soon as it is discovered, and should be controlled, wherever possible, by compression therapy. In this type also, because of the large quantities of tubercle bacilli thrown off, most careful precautions should be taken to prevent the spread of the infection to other individuals. Chronic proliferative tuberculosis persists and continues in its extension throughout the pulmonary regions. No therapy has been devised which influences this type. Progression is slow and continuous.

Treatment

The treatment of pulmonary tuberculosis is, as yet, dependent upon the trio; rest, fresh air and food.

All forms of pulmonary tuberculosis evidencing active pathosis should receive a prolonged period of rest. This rest must be mental as well as physical. Physical rest may be best obtained by avoiding excitement in the environs of the patient, invoking silence as to speech, and having the patient breathe slowly and quietly.

Compression therapy should be utilized in all patients having a caseous pneumonic tuberculosis, where the disease is unilateral or where bilateral disease permits unilateral compression or a combination of different types of such therapy. Compression therapy offers a two-fold benefit: the prevention of spread of tuberculous disease into new areas of lung tissue or to other organs; and the control of spread of infection in the home or community, by limiting the expulsion of tubercle bacilli from the compressed disease process. The pioneer work in this country by such men as Carl A. Hedblom, Pol N. Coryllos, Ralph and Ray Matson, John Alexander and Archibald, in extending the knowledge of the various procedures involved in this form of therapy to many hundreds of medical men, has resulted in the successful treatment of thousands of patients.

Compression therapy offers the following procedures:

1.—Artificial pneumothorax.
2.—Oleothorax.
3.—Phrenicoexeresis.
4.—Extrapleural pneumolysis.
5.—Extrapleural thoracoplasty.

Pneumothorax, being the simplest procedure, should be the procedure of choice, amplified, if necessary, by intrapleural pneumolysis, where this latter procedure can be helpful.

Oleothorax, first suggested by Bernou in 1922, also has a place as an adjunct procedure to artificial pneumothorax. As described by Ray W. Matson, it has a definite indication in the disinfection treatment of: (1) pneumothorax empyema; (2) as inhibition oleothorax, to prevent expansion of the lung in cases where a satisfactory collapse cannot be maintained by air inflations, because of a threatened early obliterative pneumothorax; and (3) as compression oleothorax, to reestablish compression in patients where air inflations have failed to maintain a proper collapse of the diseased lung tissue.

Extrapleural pneumolysis, in the form of apicolysis, phrenico-exeresis and extrapleural thoracoplasty, also have definite indications, either as independent procedures or in combination with one another.

We should regard these various procedures as filling definite places, with definite indications, wherever compression therapy is necessary. We should, of course, give preference to the milder surgical procedures when they can be performed, but we should not regard the more severe procedures, such as thoracoplasty, as heroic measures or forlorn hopes. We should, rather, habituate ourselves to consider these as specific operative procedures, each one of which has its indications and contra-indications; its possibilities and its limitations.

Extrapulmonary Tuberculosis

Intestinal tuberculosis: Increased knowledge in this condition focuses our attention on two facts:

1.—That careful investigation, particularly through roentgenologic studies, has permitted early diagnosis of this type of intestinal disease.

2.—That this type of disease can be healed.

The increased number of patients with this disease who have recovered centers around an improvement in the dietetic management of such patients and in the use of ultraviolet therapy. Patients having this disease should be given a demulcent, non-residue diet, containing a balance of proteins, carbohydrates and fats, as well as a sufficient amount of mineral substances and vitamins. Particularly is vitamin D of importance, and this vitamin is obtained through the feeding of cod-liver oil or viosterol, combined with orange juice or tomato juice. As an adjunct, therefore, three times during the day, patients are given two ounces of cooled tomato or orange juice, with one ounce of cod-liver oil or 15 minims of viosterol layered over the juice, to be taken after the meal. Calcium gluconate is given to my patients with this condition, either orally or intramuscularly, at definite intervals.

The ultraviolet therapy may be natural, through exposure to sunlight, or given by the use of a lamp therapy, preferably a mercury-quartz unit. In the exudative or caseous pneumonic tuberculosis of the lungs, the chest should be protected from this form of treatment and the exposure limited to the region below the diaphragm.

Genitourinary tuberculosis: In this form of tuberculosis there also appears a clarification of previous ideas. Charles Morgan McKenna, in a personal note, states that there appears to be a considerable amount of confusion or difference of opinion in the medical profession concerning tuberculous lesions in the genitourinary tract, some urologists holding that tuberculosis in the epididymis, prostate gland or seminal vesicles is always secondary to renal tuberculosis. In 174 autopsies on tuberculous individuals, reported by Doctor McKenna, this belief was not proved. In a large percentage of cases, the kidneys showed no tuberculous lesions, but such lesions were found in other parts of the urogenital tract. There were, however, a definite number of cases in which primary tuberculosis was found in the kidney, with secondary involvement in the epididymis, vesicles and prostate. This proves that tuberculosis of the urogenital tract is a blood-borne disease. Ultraviolet therapy in this condition is also very valuable.

Tuberculosis of the skin: In discussing recent advances in the therapy of tuberculosis of the skin, Arthur W. Stillians states that gold preparations, used intravenously, have revolutionized the treatment of lupus erythematosus. In the United States, gold-sodium thiosulphate is the preferred drug, and doses ranging from 1.0 to 100 milligrams, given once a week over a long period, have been successful in clearing up most cases of the discoid variety.

For all forms of tuberculosis of the skin, the Gerson salt-free, high-vitamin diet has been wonderfully successful. For patients living at home it is rather difficult to follow, but many successes are on record, even from the partial regime possible in such cases.

Laryngeal Tuberculosis: Here, too, ultraviolet therapy has been an important factor in causing the recovery of many cases of tuberculous laryngitis, which previously were considered incurable. In the patient having the advanced form of this disease and presenting the horrifying picture of starvation, created by the difficulty of swallowing food, Spencer and Lederer recommend gastrostomy. Thorek has recently devised an improved tubo-valvular gastrostomy for this condition.

Tuberculous meningitis: The most important advance in this condition is the development of a new chemical test, which definitely differentiates this tuberculosis from other forms of meningeal irritation or inflammation. This test—the **Levinson test,** devised by Doctor Abraham Levinson—is of value in the diagnosis of tuberculous meningitis where the most diligent search has failed to detect the tubercle bacillus in the fluid. It is based on the differential protein-precipitating ability of metallic and acid precipitates and on the variations in the pH of the cerebrospinal fluid. The technic is as follows:

Into each of two flat-bottomed, narrow test tubes, about 8 mm. in diameter, is poured 1 cc. of the cerebrospinal fluid to be tested. To one tube is added 1 cc. of three-percent sulphosalicylic acid, and to the other, 1 cc. of two-percent mercuric

chloride. The tubes are corked, shaken, and allowed to stand for twenty-four hours, when the height of the precipitate in each tube is measured in millimeters. In tuberculous meningitis, there will be a marked increase in the precipitate in the mercuric chloride tube. The height of this precipitate will be at least 5 millimeters and is usually three times as great as that in the sulphosalicylic acid tube. In purulent meningitis, the reverse ratio occurs.

Rectal tuberculosis: The use of the proctoscope and the increased interest on the part of bacteriologists, gastroenterologists and proctologists is resulting in a better differentiation of ulcerative diseases in the rectum and sigmoid, according to Clement Martin, proctologist. Doctor Martin further states that tuberculous ulceration, involving the terminal colon, is at present less frequently confused with idiopathic ulcerative colitis, amebiasis with ulcerations and other ulcerations in this region.

As regards *perianal tuberculosis*, definite progress in therapy is evident. There is an increased tendency to forego temporizing and to treat these conditions adequately by surgical measures. This mode of treatment has yielded many more beneficial results. The eradication of a focus of perianal suppuration allows the factors of resistance to be focused upon the pulmonary condition, in the patient with tuberculosis, so that healing in the lung occurs more rapidly. Dr. Martin reports a series of 75 fistulectomies, from which marked benefit was derived.

Tuberculosis of the eye: According to ophthalmic literature, tuberculous lesions of the eye are quite common. This is particularly true of the reports emanating from the Central European countries and Japan. Michael Goldenburg states that the prevailing opinion among ophthalmic writers on this subject is that such eye lesions are not common in pulmonary tuberculosis or tuberculous lesions of other parts of the body. In a survey of the patients of the Municipal Tuberculosis Sanatorium of Chicago, by Goldenburg, in 1930, 1178 pairs of eyes were examined, and the number of eye lesions found was exceedingly small. This led him to the deduction that, if these lesions are so uncommon in patients with active tuberculosis, then ocular lesions commonly described as tuberculous must be open to question.

It is his opinion that the prevailing concept of a tuberculous lesion of other parts of the body must apply to the eye; namely, that such a lesion must be preceded by an implantation of the tubercle bacillus. The modus operandi may be different; that is, in the absence of lymphatic vessels in the eye, the implant must be hematogenous, in the form of an embolus, as in miliary tuberculosis. Goldenburg does not agree with those writers on this subject who contend that such lesions are the result of a tuberculous toxemia and who explain the phenomena on the basis of a cellular sensitization to a previous tuberculous process. He states that we know too little about the effects of toxins on the cellular structures to warrant such a definite deduction. He, therefore, concludes that many of the eye lesions now diagnosed as tuberculous are lesions of unknown etiology and require further study and classification. He does not take seriously tuberculin reactions in the adult.

Progress in tuberculosis control, from a clinical, public health and sociologic standpoint, continues to cause new decreases in the mortality from this disease, but the road to complete eradication of tuberculosis is not straight uphill. There are, as yet, some gulleys and ravines, which make detours necessary, but these, it seems, should offer only temporary obstacles in making this disease of minor consideration in the mortality tables of civilized countries.

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Recent Advances in Ophthalmology

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THE word, new, seems to be paramount in the life of the present-day progressive man. New methods of transportation; new methods of conducting business; new machinery; new inventions; in fact, almost every line of activity can boast of its progress in things that are new.

The practice of ophthalmology has undergone changes in the past few years equal to, if not greater than, those in any other branch of medicine. New methods in surgery; new physical agents for therapeutic use; new methods of examinations; and new discoveries in general medicine, directly affecting the practice of ophthalmology, place this branch of medicine in an ultrascientific atmosphere.

In this short paper, I shall endeavor to mention some of the newer methods and briefly describe a few of them.

Perhaps one of the most valuable of the physical therapeutic agents for the treatment of many of the more common ocular diseases is the ultraviolet rays.[1 to 7] This agent is not new, nor is its use in treating diseases new; but, due to the invention and construction of more perfect ultraviolet-producing devices[8] and to the efforts on the part of many research workers, it has been brought to the attention of the ophthalmologists who have, in a general way, accepted it and are using it to great advantage.

In order to simplify the classification of diseases amenable to **ultraviolet irradiation**,[9] it can be said, in general, that it is beneficial in all excoriations and ulcerations of epithelial surfaces, such as squamous and deep ulcerative blepharitis, pseudo-blepharitis, phlyctenular and ulcerative conjunctivitis, keratitis superficialis and ulcers of the cornea. Episcleritis and other non-ulcerative diseases also respond to its application.

In the treatment of corneal ulcers,[10] I have used the Birch-Hirschfeld lamp of Zeiss, the Kromayer lamp of Hanovia, and the cold-quartz orificial lamp, produced by the Electro Therapeutic Products Company and, in the treatment of all affections amenable to ultraviolet therapy except corneal ulcer, I prefer the cold-quartz apparatus, because of its simplicity of application. The treatments are given from three times a day to three times a week, depending on the severity of the condition.

Much research work has been done and many papers have been written concerning the various new theories as to the cause and the results of new experiments in the treatment of **trachoma,** none of which can be held out as a cure in the average run of cases. An attempt to choose the best treatment for trachoma from a review of the literature would be hopeless, as one becomes confused by the diversified statements and experiences of the many investigators; therefore, I will speak from personal experience only.

Two types of treatment lately employed for the control of trachoma are ultraviolet therapy[11] and diathermy,[12] both of which have provoked much study, resulting in many favorable comments in the literature.

The x-rays[13] for the treatment of inflammatory conditions[14, 15, 16] about the eye, and radium[17, 18, 19] for the control and care of malignant infections of the eye, are receiving a great deal of attention, both here and in Europe, with reports, of most gratifying results. **Thorium x,**[20] chemically-produced rays, are spoken of as a new treatment for xanthelasma.

Another agent receiving much attention in the literature, for the treatment of various diseases of the eye, is the borderline[21] or **Grenz rays,** also spoken of as the Bucky rays, which are quite closely associated with the x-rays.

Keratoplasty, or transplantation of the cornea, until recently more of a dream than a reality, has been advanced toward a successful goal by the work of Prof. Elschnig,[22] of Prague and of Castroviejo,[23] now of Columbia University, who has succeeded in making many successful transplants in rabbits' eyes.

Glaucoma may truthfully be said still to belong to the class of unconquered affections of the eye, and the old treatment with eserine, pilocarpine, and the hitherto-recognized surgical procedures,

still hold their places among the more or less successful new procedures,[24, 25, 26, 27] which are the result of the work of many investigators, to whom much praise is due.

Magitot[28] said, "In such a complex question as glaucoma, certain points remain obscure, even when we have done our best to use all the knowledge at our disposal. Doubtless, scientific progress of tomorrow will supply new light and clear up the whole picture for us."

Retinal detachment has been one of the subjects of greatest interest to the ophthalmologists of the world in the past few years, due to a new hope of cure found in the surgical procedure of Prof. Gonin.[21] His theory is that all retinal detachments are due to a tear or hole in the retina. His technic for its reattachment is to puncture the sclera at a point corresponding to the tear in the retina, allowing the fluid behind that structure to flow out, thus bringing the retina back to its original position, and then holding it there by electric cauterization of the hole in the retina through the scleral puncture. This has offered more for the cure of retinal detachment than has heretofore been accomplished. Gonin's operation has been employed by many, with results much more satisfactory than with any other form of treatment.

Cataract has always been paramount among affections of the eye, in the minds of ophthalmologists, who, for centuries, have been striving to find a better method of removal. This has at last been partially agreed upon. As is indicated by the more recent writings, the *intracapsular method* of extraction seems to be the one of choice. This has been brought about by the efforts of Wright, of Columbus; Smith, of India; Barraquer, of Spain; Elschnig, of Prague; Fisher, of Chicago; Knapp, of New York; and others.

The intracapsular method of extraction is not new, for Wright performed it, in America, in 1882,[30] but it has only recently been accepted in a general way by the profession of both continents. During an extensive visit through Europe five years ago, I met only two ophthalmologists who were using it as a routine. I have just returned (October, 1932) from another trip to Europe, during which it was observed that only a very small number of the outstanding ophthalmologists are still using the old method. By far the greater number are advocating the intracapsular extraction.

Fisher[3] has recently described a newer method of intracapsular extraction, in which he combines the principles of both Barraquer and Smith, and for which he claims fewer broken capsules and better subsequent results.

A new method of cataract extraction, which has been described by Lacarrere,[32] consists of electric coagulation of the crystalline lens with a high-frequency current. I have done some animal experimentation with this method and feel that it may be a recognized method in the future.

The forceps method[33] for intracapsular extractions of cataract seems to have gained more ground than any other type of technic, and this is no doubt due to its simplicity, requiring very little in the way of special apparatus. It seems to be a safe method for the operators with limited experience.

The Barraquer technic for intracapsular extraction, in my opinion,[34] is the best type of operation, because of fewer burst capsules, but it is an operation which should be used only by those operators with considerable skill and dexterity, gained from a broad experience.

For operators with limited experience, the forceps operation, or, still better, the new Fisher operation, is the best. I have reached this conclusion as a result of a review of the literature, observations here and abroad, and from my personal experences in my own clinic and in those of India, during my two visits there.

The use of **contact lenses,**[35] for the correction of errors of refraction produced by keratoconus,[36] irregular astigmatism and myopia, is receiving merited attention and, while it cannot be classed as a great success at present, it would appear that the future holds much in store for it. The fact that the whole refractive power of the cornea can be changed to suit the needs of the patient is a strong point in its favor, the greatest difficulty being that the patients experience more or less difficulty in attempting to accustom their eyes to them.

The use of the corneal microscope and slitlamp,[37] in combination with the extracranial method of x-ray localization[38] of foreign substances, especially in the anterior segment, and Comberg's method[39] of contact-glass localization, are recent im-

provements in the demonstration and localization of **foreign bodies in the eye.**

Sympathetic ophthalmia[40] is another condition belonging to the class of unconquerable diseases, but much benefit has been reported in the literature and by personal communications praising the method of combating the condition by auto-hemo and auto-serum injections, as described by Dr. Fisher[41] a few years ago.

Spastic entropion, especially of the senile type, has been quite successfully managed in recent years by the use of multiple ignipuncture in the lids along the cilia line. To this has only recently been added another treatment for the same condition; namely, the injection of procaine,[42] followed immediately by alcohol,[43] into the lid near the attachment of the lateral palpebral raphe.

Much praise and commendation are due to the army of ophthalmologists and research workers, whose untiring efforts, in the line of research, have produced results, seemingly of greater or lesser value, which, in themselves, prove only a small part but, added to discoveries of others along the same or similar lines, increase our store of knowledge, out of which must come our future advancement in ophthalmology.

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231 W. Washington St.

Basic Research at Washington University

Reported by George B. Lake, M.D., Chicago

SINCE the time of Hippocrates, there has been a tendency among medical writers to assume that the authorities who preceded them were right as to their basic concepts, and to begin and carry on their work with these conclusions taken for granted. So great was the prestige of Galen, for instance, that it delayed the progress of medical science for a thousand years or so.

Another tendency which has held back the advance of clinical medicine is the disposition of laboratory research workers to behave like cloistered monks and to take the position that they are a group apart from and decidedly superior to and more "scientific" than the men who are fighting hand-to-hand battles with disease in the operating theatres, consulting rooms and at the bedside.

Architects' Drawing (Jamieson and Spearl, Architects) of the McMillan Hospital and Oscar Johnson Institute.

These two erroneous attitudes have been discarded at Washington University, St. Louis, at least in the Oscar Johnson Institute and McMillan Hospital, of which I am writing. At this institution, the plans for which were described in CLIN. MED. AND SURG. for September, 1930, the endowment is sufficient to hire a number of full-time investigators, who are ably directed by Dr. L. W. Dean (himself a full-time worker) and who are instructed to take *nothing* for granted, but to find out how *and why* things *actually take place*, without regard to any preconceived opinions upon the subject.

As for the other part of the system, research and clinical studies are tied together constantly, just as they are in medical practice. The researchers must go into the clinic and personally see the patients from whom the specimens they are studying come; and the clinicians must go into the laboratories to see what becomes of the specimens and what the researchers have to suggest regarding further diagnostic measures and treatment.

The clinics, in which several full-times men are working, are conducted on a part-pay basis, every patient paying at least fifty cents for each visit. If the individual cannot afford even such a fee as that, it is paid for him by one of the city's welfare agencies, which acts as his sponsor. The social service worker in charge of this phase of the activities in unable to look up the financial status of every patient, but feels sure that very few persons not entitled to such services receive them. When any of the full-time heads of departments see private patients, the fees received go into the research fund.

The Institute is well equipped for the kind of work being done there. C. C. Bunch, Ph.D. (in physics) who is conducting research work in the physics of hearing, using the audiometer and other instruments, has a completely sound-proof room in which to carry on his experiments. Dr. Allen Potter has an ear microscope (one of the only two in the United States, I understand) for the study of the clinical anatomy and pathology of the external and

middle ear. There is also a vibration-proof room, where delicate tests are made, and a reasonably sound-proof room where crying children wait their turn in the clinic, without disturbing the other patients. Four floors of the Institute are devoted to research laboratories. In one room, a group of animals has been living in filtered air for several generations, alongside of a similar group living under normal air conditions. In this way, the effects of smoke and gases upon the respiratory organs can be determined beyond doubt or question. An expert mechanician is employed on a full-time basis to make, repair and care for the many complex and delicate instruments required in the work.

In reporting some of the special lines of research being carried on, I shall sometimes do so in my own words, as the result of personal observation, and sometimes as an abstract of the statements of the workers.

Sinus Disease

In 1929, **Dr. Arthur W. Proetz,** who is connected with the Institute, began a series of studies on sinus disease, which has borne good fruit. Dr. Proetz was in Spain when I visited St. Louis, but his keen and able associate, **Dr. Edwin C. Ernst,** who is a widely known roentgenologist, spent several hours in showing me the work under their charge.

Feeling that the usual practice of making one or two roentgenograms of the sinuses did not give sufficient information, they have devised an apparatus for taking six pictures, on three films, with such accuracy of adjustment that later views can be taken which will correspond *exactly* with the first set. In doubtful cases, the sinuses are filled with *light brominized oil,* by the insufflation and displacement method, and another six views are taken at once, with other sets 48 and 72 hours later, to determine how rapidly the sinuses empty themselves.

Dr. Ernst's roentgenologic equipment, for both diagnosis and treatment, is exceptionally complete, well-arranged and accurately controlled. He has devised a protective stool, by the use of which fluoroscopy can be practiced without exposing the operator to the rays, and an ingenious apparatus for measuring the *quality,* as well as the quantity, of radiant energy to which a patient is subjected.

As a result of their studies, Proetz and Ernst are convinced that many "sinus" cases are manifestations of allergy, and these have been cleared up, clinically, by means of proper medical treatment, without operation.

Temperature Changes and Metabolic Disturbances

By A. J. Cone, M.D., St. Louis, Mo.

A considerable series of experiments has shown that there is a definite relationship between alterations in the metabolic rate, allergic conditions and the temperature of the mucous membrane of the middle turbinate. These temperatures are determined by means of a modified Tycos dermatherm, with a thermopile so constructed that it can be introduced into the nose.

These tests have shown that the temperature of the nasal mucous membrane is elevated in the presence of hyperthyroidism and acute infections, and lowered in allergic states and in conditions attended by a lowered basal metabolism.

At the present time, the only obvious clinical application of this knowledge is the ability to recognize those boggy conditions of the nasal mucosa which are due to hypothyroidism and allergy, so that they can be treated medically and the patient thus be spared an unnecessary and useless cauterization. Other clinical applications may develop later.

Otosclerosis

By L. K. Guggenheim, Ph.D., St. Louis

The theories as to the etiology of otosclerosis have been fixed for many years, but a careful study of the embryology of the ear, starting with a five-day human embryo, and making comparison with the ears of animals, shows that they have all been erroneous.

The lower vertebrates do not show the round and oval windows in the labyrinth. In the human being, the foot-plate of the stapes is derived from the capsule of the vestibule, contrary to the statements now found in most textbooks.

The tendency to otosclerosis is hereditary and is inherent in the genes of the chromosomes. Two factors are operative in its production, and one of these is sex-linked and is the *underlying* cause behind all cases, whatever the *exciting* cause may be.

Otosclerosis is not, therefore, a *disease,* but a *regression* of the structures of the

human ear to a lower-animal type, in those who have a *hereditary tendency* in that direction.

Trachoma and Allergy

By Louis Julianelle, M.D., St. Louis, Mo.

Trachoma is a disease of very low virulence, localized in the eye and *chiefly the cornea* (*not* the eyelids, as is popularly supposed). It is a *clinically* specific disease, but is probably not bacteriologically specific. It seems more and more improbable, as our studies progress, that Noguchi's trachoma bacillus is specific. In fact, the staphylococci and diphtherioids are the organsims most commonly found.

It seems probable that the condition is a mixture of allergy and infection, the same as we find in tuberculosis and gonorrhea, and that it is non-specific and diphasic, like scarlatina.

The cornea can be *sensitized* with and to bacterial products (the staphylococci act best), but the same sensitization can be produced with purified, *sterile* egg albumin, producing a cloudy cornea and pannus.

We must remember that bacteria produce two types of reactions: One—slow and inflammatory, like that of tuberculin—resulting from the bacterial *proteins;* the other—rapid (5 to 10 minutes) and in the form of a wheal and erythema, as seen in skin tests with pollens in hay-fever—due to the bacterial *carbohydrates* (sugars).

Deafness and the Use of the Audiometer

By C. C. Bunch, Ph.D., St. Louis, Mo.

The audiometer is a useful instrument for making and recording accurate measurements of the quantity and quality of the auditory acuity, so that the results of treatment can be objectively observed. It produces twenty-two tones, ranging from 32 to 16,384 vibrations per second, and the *intensity* of each tone can be varied at will, within considerable limits.

Children can hear high tones, which are inaudible to most adults. A loss of the low tones indicates **conduction deafness;** while a loss of the high tones is characteristic of **nerve deafness.** The audiometer is useless in children under seven years, because they cannot fix their attention and concentrate.

In order to hear ordinary conversation, one must be sensitive to tones ranging between 300 and 3,000 vibrations per second. The electric hearing aids amplify *all tones* uniformly. They are, therefore, useful in *otosclerosis,* where the audiometric curve is moderately low and relatively flat—that is, *uniformly* reduced. Unless one is permitted to try an electric hearing aid, it is best not to buy it. Sometimes they are very helpful, but not always. A girl of ten years had a marked loss of hearing in the *speech* range, but good hearing above and below that. This is a congenital developmental defect, and an electric hearing aid would be useless.

The human voice is never a pure tone. The overtones spread throughout the speech range and it is practically impossible to lower or raise the voice to fit the hearing powers of the deaf person. Another patient, thirteen years old, showed a general lowering of the auditory acuity, *especially in the speech range* (a relatively flat audiometer curve). An electric hearing aid should be helpful here.

A patient's general physical condition has a decided influence upon his *subjective* hearing.

Miscellaneous Studies

Among the interesting and suggestive, but as yet not fully oriented, discoveries which have been made and are being followed up, is the fact that cholesterol crystals are found in many ear discharges where *cholesteatoma* is definitely not present.

Dr. P. R. Nemours is experimenting with and studying the chemical reactions of the blood and nasal secretions and the significance of eosinopilia in nasal discharges. He is also beginning some studies of the "vagal hormone," *acetylcholine.*

So far, it appears that the nasal secretions are more alkaline and the eosinophiles are increased in the presence of allergic reactions.

Experiments on rabbits have shown that irrigations of the nasal sinuses with calcium-combining solutions, such as those of alizarin and sodium citrate, will destroy the cilia of the epithelium in the presence of alkalosis, but will not do so if the pH of the tissue fluids is low (acidosis).

Dr. C. S. Linton has demonstrated that a sufficiently virulent microorganism can penetrate a perfectly healthy mucous membrane; and that a vaccine, *applied locally,*

will frequently protect as well as or better than one given parenterally.

Dr. W. F. Wenner, considering the reports that resistance to infection is markedly lowered in adrenalectomized animals, has been making significant experiments which show that experimental sinusitis in rabbits can be cleared up by intramuscular injections of **adrenal cortex extract.** He has used this cortin in two cases of sinusitis in children, with brilliant results.

These fragmentary reports of uncompleted experiments are made solely with the purpose of showing what interesting possibilities are opened when research workers and clinicians cooperate in attacking basic problems, unhampered by the shackles of prejudice and the weight of ancient and accepted (but unsubstantiated) authority.

28 E. Huron St.

Progress in the Non-Operative Treatment of Cataract

By A. Edward Davis, M. D., New York City

THE medical treatment of cataract was used in the most remote times. Celsus stated, in his "Description of the Eye": "I have already elsewhere mentioned a cataract, because, when recent, it is often removed by medicine." And Galen, in his "Ocular Pathology and Anatomy," says, "A cataract, in the beginning, can be dispersed, but not later."

So far as we know, in ancient times the non-operative treatment of cataract consisted generally in hygienic measures—diet, cathartics, etc., and locally, the application of counter-irritants, in the form of irritating washes and salves, hot or cold packs and the actual cautery to the temples. Since then, many remedies, both local and general, for the medical treatment of cataract have been used, mostly from a strictly empiric point of view. Needless to say, most of them proved of little value, except as they improved the genèral health and nutrition of the patient, thereby indirectly affecting the nutrition of the crystalline lens and slowing the progress of the cataract.

It was not until the advent of cellular pathology and, with a better knowledge of focal infections and toxins, immunology, allergy, biochemistry, chemotherapy and physiology, that the treatment of cataract by non-operative methods could be placed on a scientific basis. In recent years, special investigations on the biochemistry of the lens, the permeability of its capsule and cultivation of the individual epithelial cells have been made; also many investigations as to the pathogenesis of cataract. From these investigations, a number of remedies have been advised for the treatment of cataract. Strictly medical agents, such as potassium and sodium iodide, dionin, boroglycerin and cyanide of mercury, among many others, have proved most useful.

Immunologic Remedies

As early as 1909, Roemer reported 300 cases of cataract treated with Lentocalin, a lens protein which he had made up in tablet form and which was given by mouth. He based this form of lens-protein treatment on the theory that cataract was a metabolic disease, just as is diabetes, and was due to toxins in the system. The lens-protein, by stimulating antibodies in the blood, was supposed to neutralize these toxins. Unfortunately, he gave these lens tablets by mouth and they were digested in the stomach, being converted into amino-acids, in which form they entered the circulation, deprived of their antigenic properties; and that is why he saw very little, if any, effect from his treatment.

Dr. A. Siegrist,* in his recent book on the etiology and non-operative treatment of cataract, reviews the literatre of the entire subject, from the time of Celsus, some 1900 years ago, until the present time.

In seeking for a remedy for cataract, Siegrist himself lays great stress on the tetany theory, based on the dysfunction of the endocrine glands. In other words, he

*A Siegrist; *"Der Graue Altersstar,"* Berlin, Urban and Schwarzenberg, 1928.

thinks that cataract is due to lack of sufficient hormones from the thyroid, parathyroid and genital glands. To remedy this defect in the hormone supply, he administered the extracts from these glands in tablet form, which he called Euphakin. Siegrist reported 32 patients with senile cataract, treated by this method. He had the patients under observation for from two to three years, and noted only slight changes in the lenticular opacities; however, the vision was conserved in some of the cases, while it was improved in others, from 0.1 to 0.3. Unfortunately, Siegrist reports but a very few cases, and those not in great detail, so no fair conclusion can be drawn as to the value of the remedy.

My own experience in the non-operative treatment of cataract extends over a period of some thirty years. Experiments were first made in 1902 on animals—guinea-pigs, rabbits, etc. The remedy first used was *anti-lens serum,* and later **lens-antigen extract.*** On February 1st, 1921, these remedies were first used on a human being. Accepting Roemer's theory of senile cataract as a metabolic disease, just as is diabetes, due to toxins in the blood, the lens-antigen extract was given to stimulate the formation of anti-bodies, which in turn acted against these toxins in the blood. Lens-antigen not only incites the body cells to the formation of specific antibodies, but creates a mild leukocytosis (the latter greatly increased locally by the use of hot applications to the eye, irritating drops, etc.), which fortify the healthy lens fibers against toxins, while, at the same time, they destroy or liquefy by cytolitic action the dead lens fibers—cataractous or necrotic material.

Keeping in mind, therefore, the necessity of the proper nutrition of the lens cells and fibers, and the great part that leukocytes play in carrying the proper food (trephones) to such cells, the rationale of local irritation of the eye itself—by using drops in the eye, such as glycerin, dionin, etc., or by injecting an irritating substance under the conjunctiva, thus inciting local hyperemia, and drawing leukocytes to the eye—may also be understood. In fact, a number of ophthalmic surgeons claim that, by the use of local irritants alone, incipient cataracts in the earliest stages may be arrested and vision often restored to normal. Among these may be mentioned Badal, Dor, Taylor and Colonel Henry Smith, Van der Hoene, and lately Dr. John E. Weeks.

These injections of lens-antigen I now give every other day, beginning with 0.5 cc. and increasing to 8 or 10 cc. or more, fifty injections constituting the course of treatment. After the injections are completed, the patients are ordered to use either a 2-percent solution of dionin three times a week, for two months, stopping for a month and repeating this method indefinitely; or the Weeks' boro-glycerin solution is ordered, to be used at least once a day. The Weeks' solution (equal parts of pure glycerin and a 3-percent solution of boric acid) may be used for an indefinite time—years if necessary—as these drops do not lose their effect by repeated use, as is the case with dionin. All patients should be tested for sensitiveness to the lens-protein before beginning therapeutic injections.

This method of non-operative treatment of cataract has been beneficial in the ordinary gray, senile cataract, especially when taken in the early stages. In 1931 I gave the statistical reports of 420 cataractous eyes treated by this method; and since that date and up to the present time of writing, considerably more than 500 cataracts have been treated. In the incipient cases of the ordinary subcapsular senile cataract, between 80 and 85 percent of the cataracts were arrested; that is, their progress stopped and, in 40 to 45 percent, not only was the progress of the cataracts arrested but the vision was improved. In many instances the lenticular opacities were lessened and in quite a number the opacities were completely absorbed.

It may be mentioned here, that ultra-violet rays have been used in the treatment of cataract (Schutzgläser), but with little effect. Likewise, radium has been employed. Martin Cohen, of New York, reported 24 cases treated by this method, which at first seemed to improve the condition in 87.5 of the cases treated. Later and when it was used by others, it was found, not to prevent, but to produce cataract; so the radium treatment was promptly abandoned.

Conclusions

Citing the results obtained by other ophthalmologists, and from my own experience,

*This extract contains the lens-protein derived from the crystalline lenses of animals.

after more than 40 years in the practice of ophthalmology, I am firmly of the opinion that, if active, non-operative treatment of cataract, both general and local, were widely taken up, not *one-half* of the operations now performed for the removal of cataract would be performed. In fact, it would not be necessary, the patients living the rest of their lives with useful vision.

All of those who have used the non-operative treatment of cataract have emphasized the importance of early diagnosis; and since it is possible, in the early stages, to stop the progress of cataract, the people generally should be as well acquainted with that fact as they now are with the necessity for the early treatment of cancer, tuberculosis and diabetes. Furthermore, were patients informed that cataracts, taken in their incipiency, could, in the majority of cases, be arrested, they would not be obsessed with fear, as they now are when the great majority of ophthalmologists tell them that nothing can be done for them except an operation.

I would suggest, therefore, that all presbyopes, when they come for their glasses, should have the pupils dilated and a careful examination made, to determine whether or not the patient has lenticular opacities or beginning cataract. If the patient has incipient cataracts, he should be informed of the fact (unless very feeble or nervous) and advised as to the necessity of early treatment, in order to preserve the vision. It is not wisdom, or indeed good policy, in my opinion, to let the patient drift along until the sight is almost lost, and then tell him he has cataracts, and that it will be necessary to wait until the vision is lost, or almost so, before anything can be done, when an operation will be necessary.

Such advice, in my opinion, is entirely wrong and harmful in its effects and, judging from the good results obtained by ophthalmologists of wide experience, who have used the non-operative treatment, much can be done and has been done by this method of treatment. Col. Henry Smith, who, perhaps, has had the widest experience in the treatment of cataract, both operative and non-operative, of any man in the world, claims that senile cataract, taken in the earliest stage, is often curable, even when the distant vision has been reduced to 6/10. He states that, up to 6/10, he is successful, in almost every case, in obtaining a return of 6/6 (normal vision) and retaining it for years. He expressly states, however, that sand-like opacities and striae do not disappear. Dr. Weeks' experience in cataract work, both operative and non-operative, is widely extensive, and he reports highly successful results by the non-operative treatment of cataract.

Any new idea is slow to be taken up, and in the practice of medicine this is especially so. *Preventive medicine* is the order of the day, even to the extent of preventing the formation of cataract, when taken in the early stages. Patients who are found to have incipient cataracts should be informed of the fact, tactfully of course, just as is now done in incipient cases of tuberculosis, diabetes and cancer, and active, general, local and specific treatment instituted. At least the patient should be given a chance to avoid the most delicate operation in all surgery—one not always successful. I still hold to that idea and make that plea.

40 E. 61st St.

Education in Self Reliance

When we say that a good citizen is a liberally educated man, we imply that he has the virtues of such a man. He has an informed and critical mind, he is capable of reaching intelligent social convictions, and he has sufficient firmness of character to act upon his convictions. It is the function of education to develop individuals of such mind and character, to the end that we may possess a selfreliant citizenship, trained to independence of thought and action.—Dr. Robert G. Sproul, Pres., Univ. of California.

PHYSICAL · THERAPY
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PROPHYLAXIS OF CANCER OF THE UTERINE CERVIX

THE absolute curability percentages of carcinoma, reported from various clinics, whether treatment was surgical or radiologic, varies from 20 to 25 percent. The relative curability percentages obtained in early, clearly localized carcinomas vary from 75 to 90 percent. Surgery has a high primary operative mortality, varying from 15 to 25 percent. Radiology has a negligible mortality attributable to treatment, amounting to less than 2 percent.

Radical eradication of cancerous uteri by the Wertheim operation has been rendered about as extensive as possible, and the technic of radiologic treatment has been so perfected, in well organized radiation institutes or clinics, that an improvement, by treatment, in the five-year good end-results can probably not be expected. If better results in cures are to be attained, improvement in prophylactic procedures and early diagnoses must be sought for. Prevention and early diagnosis of cancer will offer the only possibilities to control the "red plague." The surgeon and the radiologist have contributed and perfected the methods of treatment to the highest degree possible, and the general practitioner and diagnostician must now step in and center their thoughts on discovering the preceding and incipient stages of cancer.

Several general characteristics and facts concerning all cancers should be reiterated: (1) Cancer does not grow in healthy tissues or organs; (2) cancer begins in a spot or focus, the cells of which, at first, are not malignant nor atypic, but of an inflammatory nature; (3) chronic, mild irritations and infections of low degrees cause these spots or work on these nodules and produce the changes characteristic for malignancy; (4) all tumors must grow to some extent before causing symptoms; (5) the discovery of cancer during this symptomless period and the immediate application of adequate treatment would put us in control of the disease; (6) if physicians became cancer-minded; i.e., would always think of the possibility of the presence of malignant disease in chronic tissue changes, then diagnoses would be rendered without delay; (7) the avoidable delay by the physician, by placing the patient under observation, instead of making

an immediate diagnosis and applying treatment forthwith if cancer is found, is responsible for the poor end-results of treatment; (8) it seems highly probable that the first stage of cancer of the cervix proceeds from chronic cervicitis, which presents either papillary erosions or follicular nodes (Nabothian cysts) and results from an inflammatory exudate which is not sufficiently fulminant to destroy the epithelial layer, but is enough to cause the cells to proliferate, forming papillary erosions or Nabothian cysts. Hence, *prophylaxis means treatment of chronic cervicitis.*

Bossi, in 1913, discussed the true prophylaxis of uterine carcinoma and stated that chronic ulcers of the cervix and hyperplasia of the endometrium are precursors of carcinoma. The diseased part of the cervix was removed by a low, circular amputation and the hyperplastic endometrium by curettement. Bossi did not observe a single cancer after many years of follow-up, in about 7,000 cases.

Pemberton and Smith subjected all cervical tissues removed by operation to systematic microscopic examinations, and found that 2.39 percent of the cervix cancers were found by such examinations. During a period of 52 years, 5,962 cases of chronic cervicitis were treated, 3,814 cases by trachelorrhaphy; 740 cases by amputation; and 1,406 cases with the electrocautery. Only 5 women developed cancer afterwards, and these were in those cervices treated with trachelorrhaphy. They found, in 669 carcinomas, only 12 cases which had had a cervical plastic operation.

Hunner subjected 2,895 cases of chronic cervicitis, treated by either amputation or cautery, to observation for 10 years, and not a single cancer developed.

Schiller found, in serial examinations of cervices in 135 uteri removed for other pathoses, 4 beginning carcinomas (2.96 percent). During the same time, 35 cervical and 5 corpus carcinomas were clinically diagnosed in 1,549 consecutive gynecologic cases, or 2.55 perent. One may assume, therefore, that 2.96 percent are not diagnosed clinically, and the incidence of carcinoma in gynecologic patients would be 5.51 percent.

These statistics demonstrate: (1) The relation chronic cervicitis bears to cancer; (2) the necessity of treating and *curing* chronic cervicitides, whether they cause symptoms or not; (3) chronic cervicitis can be found only by insisting on detailed, complete physical examinations of the patients at the first visit at the physician's office, which examination must include an inspection and palpation of the genital organs in the parous women, and, if symptoms such as leukorrhea or irregular bleeding exist, also in the non-deflorated patients. All parturient women who have gone through a full term or premature labor or abortions should be examined six to eight weeks afterwards and, if chronic inflammatory changes or scars from lacerations are found, the diseased tissues should be immediately subjected to treatment; (4) should doubt exist in the mind of the examining physician concerning the findings, consultation should be had with a specialist, preferably one trained in the diagnosis and management of malignant disease; (5) all tissues removed should be subjected to serial sectioning and each slide should be examined microscopically to rule out or in carcinoma, since about 2.5 percent of cancers are not clinically diagnosable; (6) such a plan would put us in control of cancer. If it could be enforced in all women, cancer would become a negligible cause of death in the mortality statistics.

H. S.

Progress in Physical Therapy

By John Severy Hibben, M.D., Pasadena, Calif.

PHYSICAL therapy is on trial, and those who believe in it must see that the trial is conducted squarely and fairly. Like everything else in this world, it lacks perfection. This its best friends freely admit. They also admit that it is often unwittingly applied to conditions beyond its reach, in which cases its effects might be harmful. As a new science, it is winning its way a step at a time, and all new sciences stumble at times, especially when utilized by untrained hands.

The success of any method of treatment must ultimately be judged by its ability to return patients to their regular employment more promptly than by other methods. By that criterion we are willing that physical therapy should be judged. Case reports and clinical experience do not tell the whole story: the evidence thus obtained should be corroborated by scientific conclusions and obvious results.

Education

Perhaps it is not too much to say that the real scientific advance in physical therapy began with the creation of the Council of Physical Therapy of the American Medical Association, in 1926. Slowly but surely the Council is regulating practice along right lines. Educational articles periodically appear in the *Journal* of the Association, thus gradually bringing the profession to an appreciation of its proper values. And this educational leadership is furthered by illuminating discussions in the other journals devoted to physical therapy and also by comprehensive treatises on the subject in book form.

Following the lead of New York State, where a special committee, under the direction of Dr. Richard Kovacs, has been very active in an educational capacity during the past three years, the California State Medical Association recently created a similar committee, and other states are preparing to follow the same example. The purpose of these committees is, not only to enlighten the profession regarding the value of physical therapy, but also to point out the growing menace of unprofessional cults and to procure legislation which will be protective and assist hospitals and medical schools in establishing physical therapy departments on successful plans.

As an aid to the routine of medical and surgical practice, Frank Kruser, of Temple View Medical School, Philadelphia, has produced an excellent educational motion picture, which strikingly portrays particular features of physical therapy practice.

We also have the American Congress of Physical Therapy, the American Physical Therapy Association, the American Academy of Physical Therapy, the American Physio-Therapy Association and a number of local associations, all having the same aims and some owning their own journals. These associations are doing good work, but much greater work could be done if all such organizations would unite along the lines similar to those under which the American College of Physicians or the American College of Surgeons, is established. United effort is always more efficient than individual enterprise, in the field of medicine as well as on athletic fields or battle-fields.

About one-half of all medical schools in the United States give instruction in physical therapy; eleven have established special departments. Some schools offer both undergraduate and graduate courses. The lecturers in these institutions are not commercial salesman.

Fever Therapy

This subject is not new. Hot mineral water baths have been used for healing purposes since ancient time, but only recently has the subject been reduced to scientific method, by Schamberg, Carpenter, Warren and others.

Hyperpyrexia by diathermy can now be applied in a very convenient and effective manner. By means of an especially constructed jacket, electrodes are applied to the chest, abdomen and back; then, in order to prevent heat loss, blankets are used. This treatment calls for from 3,000 to 4,000 milliamperes of current, depending upon the comfort of the patient. Temperature, pulse, respiration and so forth are taken at 15-minute intervals. When the temperature rises as high as 103 to 104°F., the patient is transferred to an electrically-

lighted reclining cabinet, where the fever can be maintained as long as is desired.

Hyperpyrexia by radiothermy methods has been fully described by Bierman[2] and need not be amplified here.

Physiologic changes produced by these treatments are definitely observable. Phagocytosis and antibody formation are quickly increased and, due to this increase, supposedly, infection is destroyed or controlled.

The list of afflictions for which treatment is indicated has grown amazingly. Such workers as Bierman, Carpenter, Hinsie, Schmidt, Sutton, Feinberg, Osborne and Tenney have reported results in cases of paresis, multiple sclerosis, chorea, gonorrheal arthritis, Raynaud's disease, thromboangiitis obliterans, scleroderma and psoriasis. Cady and Ewerhardt[3] found that hot baths, used on the Wassermann-fast patients in conjunction with drug therapy, reduced the serologic reactions. As to the treatment of allergic diseases, Feinberg[4] concluded that fever therapy gave highly encouraging results in a number of severe asthmatic cases. And we should keep in mind that neither the technic nor the clinical practice has been reduced to perfection; hence, as improvements are made, even greater results may be expected.

The latest improvement in diathermy apparatus is the "single-control" machine (used in place of the ordinary "two control" machine). All machines intended for hyperpyrexia treatment should have a capacity of at least 4000 milliamperes and be capable of maintaining this load for several hours continuously.

Diathermy Methods

In December, 1931, Hemingway[5] and Hansen found, from experiments, that with a treatment lasting about 20 minutes, a greater temperature can be obtained with metallic electrodes, the rise in temperature being more rapid. By using wet-pad electrodes, a deeper heating effect is obtained, equivalent to that obtained by superficial heating, but requiring a much longer time. In cases where a higher deep temperature is desired, with a low superficial temperature, the pad electrode is recommended, with a treatment of one hour or longer. In experiments on dogs, as well as on human subjects, no superficial burns were produced when saline pad electrodes were used, but a saline concentration of 10 percent or greater should be used, to keep the electrodes moist.

In the treatment of pneumonia, Stewart recommends larger electrodes, together with earlier and more frequent treatments.

Some foreign contemporaries have been using diathermy through the brain for hypertension and headaches of anemic origin, with considerable success.

Diathermy through the liver, as a prophylactic aid in cases of surgical shock (before and during an operation), is now an accepted procedure. Diathermy through the kidneys, however, appears of questionable value.

Electro-Surgery

As stated by Moore,[6] the high-frequency current can now be safely and scientifically utilized in selected cases of benign and malignant tumors, or upon abdominal viscera, or the eye and brain. Ability to seal blood vessels and lymphatics with electro-surgical currents and to destroy suspected cancer cells has made it possible, in some cases, to remove cancer from regions heretofore inaccessible, or accessible only by the extirpation of healthy tissue. Surgery of cancer of the mouth and tongue and recurrent metastatic glands; removal of biopsy specimens; carcinoma in close proximity of bone; lesions of skin, such as warts, birthmarks, moles, keliods, angiomas, telangiectases and cysts; hemorrhoids; and excision of polyps are other conditions in which electro-surgery can often be used advantageously.

Collins[7] used electro-surgery in certain types of obstriction at the bladder neck and urethra. It is a bloodless operation, performed under direct vision through the cysto-urethroscope. Deering[8] states that operations on hemorrhoids by this method are bloodless; that convalescence occurs usually within two to three days; and that there is less likelihood of strictures.

Trowbridge states that, since April, 1927, he has used the electro-surgical knife (as perfected by Geo. Wyeth, in 1923-24), at Harvard Private Hospital, in Worcester, in all kinds of incisions, such as amputations of the breast, thyroidectomy, cholecystectomy, appendectomy, hernias, cystectomy, hysterectomy, salpingectomy cesarean section, abdominal adhesions and trachelectomy, and that no complications developed except in one early case of cystomy for calculi, where the patient was 74 years old.

Kolischer[9] states that electrocoagulation

is superior to the galvanocautery and the soldering iron for the following reasons: heat is under absolute control; there is a lower primary mortality, due to minimum surgical shock and bloodlessness; heat sterilizes and prevents dissemination of cancer cells exciting a localized systemic reaction.

At a symposium of a section of the American Congress of Physical Therapy, in New York, in September, 1932, some of the suggested indications for the use of diathermy for electrocoagulation of tonsils were as follows: hemophilia; cases resistant to surgery; tonsils with malignant changes; tuberculous patients or tuberculous tonsils; lingual tonsils; and recurrent tonsil tissue.

Dillinger[10] says that it requires more skill, deftness and experience to remove tonsils by diathermy than by the old surgical procedure, and Haiman[10] also stresses the necessity of adequate training. Balmer[10] believes that electrocoagulation will not replace surgical tonsillectomy, but that it is a rational procedure; and Skillern[10] holds it is a necessity in certain cases.

Ultraviolet Therapy

No part of physical therapy practice has been more exploited, more abused and improperly practiced than ultraviolet ray therapy.

To date, the Council of Physical Therapy of the American Medical Association has accepted only three general body radiation types of generators of ultraviolet radiation. These were accepted on the premise that properly-dosed ultraviolet rays have a prophylactic and curative effect in rickets, infantile tetany, spasmophilia and osteomalacia. But strong claims are made in favor of the use of ultraviolet for a long list of afflictions, as may be found by reference to recent literature.

The newer types of ultraviolet generators include the tungsten-mercury arc (sunlight S-1 and S-2) lamps, which emit only long ultraviolet rays, equivalent to midday sun at sea level.

Another type of ultraviolet generator is a quartz ball, containing a mixture of inert gases and a drop of mercury, mounted on a high-frequency coil, fixed in an aluminum reflector. The coil is connected to a high-frequency generator and represents the primary winding of a step-down transformer, while the ionized mercury vapor in the quartz ball forms a one-turn secondary winding. A mercury vapor glow is thus produced and its qualitative spectral properties are practically the same as that of the regular quartz-mercury lamp. The advantage of this lamp is the economy that its generator serves also for the production of diathermy. Its therapeutic effectiveness will depend on the amount of energy applied and, in general, is about the same as that of "home models" of the usual mercury vapor lamps.

The Cold-Quartz Generator[12]: The glow discharge in mercury vapor is characterized by an electrical excitation of vapor in the presence of various auxillary "noble" gases. These gases really serve a double function: To render the generators self-starting without the use of tilting mechanisms or other auxillary apparatus, and as a means of transmission of electrical energy to the mercury vapor particles.

These generators operate at high voltage (500 to 1,000 volts), with current values ranging from 5 to 50 milliamperes, resulting in low energy input per unit length of the generator, with the natural result that the generators produce temperatures only slightly in excess of room temperatures. The cold-quartz body grid generators operate at approximately 50 milliamperes and the orificial generators at 5 to 15 milliamperes. They require only two minutes of operation to reach peak efficiency.

Source	Finsen Units*	Relative Effectiveness
Monochromatic*	2	100%
Cold-Quartz	4	50%
Quartz-Mercury	6 to 7	28% to 34%
Carbon Arcs	5 to 9	22% to 40%
Mazda S-1	8	25%
Sunlight	9	22%
Mazda S-2	9.3	21%

Therapeutic Dosage of Ultraviolet energy: Coblentz[11] has performed a pioneer service by calling attention to the widely varying technic employed by various workers. He insists, and rightly, that it is high time to adopt a definite, standard unit of dosage, so that the results of various

*Coblentz suggests the use of the Finsen Unit in standardizing therapeutic dosage. This represents the intensity which is equivalent in erythemogenic effectiveness to a radiant intensity of 10 microwatts (100 ergs per second) per square centimeter of Monochromatic radiation of 2,967 Angstrom units. It is a unit of intensity of energy, and refers solely to erythemogenic effect, not to the production of vitamin D nor any other factors.

workers may be correlated and put to practical use by the medical profession as a whole.

Coblentz submits data showing that radiant intensity from various sources of ultraviolet light which would be required, therapeutically, to produce equivalent dosage is as given in the chart above.

From the standpoint of total energy output of erythemogenically active ultraviolet rays, it appears that cold-quartz has twice as much efficiency as quartz-mercury arc sources.

Colonic Therapy

In certain selected cases, colonic irrigations seem to be an accepted procedure, as in cases of colitis, intestinal toxemia, fecal obstruction and constipation. By cleaning out the colon the system is relieved of toxic products which exert a burden on the metabolic process of the body. Hot, isotonic saline is the solution used in most cases. The long tube method of cecal intubation has been found unnecessary and dangerous. A short tube, inserted 3 or 4 inches into the rectum, flushes out the entire colon satisfactorily.

Various sine-wave currents are used in conjunction with colonic irrigations, but they are of limited value. Exercises and a good massage of the abdomen will often produce the same clinical results.

Physical Therapy in Dermatology

Erysipelas is one disease which responds definitely to ultraviolet radiations. The cold-quartz body-grid lamp is especially effective in these cases, because it is possible to treat larger areas and to deliver parallel radiation of great intensity in the region of 2,537 A. U. As the source is constant, definite measured dosage of erythomogenically effective radiation can be given without danger of blistering. Usually two or three doses of a heavy, third-degree erythema, repeated daily or every other day, will produce remarkable results. It is highly probable that the result is not solely the germicidal effect of the short ultraviolet radiation, but has to do with a photochemical immunization, as described by Peskind.[16] Favus and tinea do not respond to ultraviolet treatment, but are best treated by x-rays or Grenz rays. The same may be said of sycosis, blastomycosis, sporotrichosis, actinomycosis, verruca plantaris, hyperhidrosis, rosacea, keloids and nevus pigmentosus.

Electrocoagulation or electrodessication are indicated in lesions such as very thick keloids, nevus araneus, warty nevi, warts, verruca seborrheica, verruca senilis, molluscum contagiosum. Ultraviolet radiations are indicated in psoriasis, acne vulgaris, herpes zoster, alopecia areata and nevus flammeus (port wine marks).

Malignant skin conditions, as basal cell epithelioma, can be effectively treated by electrocoagulation, Wilson says[17] small lesions may be effectively treated by electrocoagulation; larger lesions can be excised by the endotherm knife. Squamous cell epitheliomas, which are highly malignant and often metastasize early, should be treated by electrocoagulation, followed by filtered x-rays or radium locally. As to non-malignant conditions such as furuncles and carbuncles, Desjardins[18] says a large percentage of infections can be treated by filtered radiation, which relieves pain in 24 to 36 hours.

All physical therapy procedures, which require no apparatus but are essential, such as massage and corrective exercises, should be given by one skilled in the art.

Exercise is an important and often neglected physical therapy procedure. Swimming and under-water exercises are essential to an institution of any size using physical therapy; graded exercises under water likewise require one trained in this much neglected but valuable adjunct.

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CLINICAL MISCELLANY

Some Uses of the Static Current

BY means of large metal plates attached to the positive pole of a static machine and placed over the cervical, dorsal and lumbar spine, the autonomous nervous system in the thorax, abdomen and pelvis may be reached. It will often reveal unusual tenderness over some portion of the abdomen, with a moderate length of spark at the sliding rods. Moderate persistence in its use will usually effect removal of venous engorgements in the liver and pancreas.—DR. F. DE KRAFT, of New York, in *Physic. Therap.*, Nov., 1931.

Angina Pectoris Relieved by Ultraviolet Irradiation

A PATIENT with severe angina pectoris was relieved by ultraviolet irradiation emitted from a mercury-vapor quartz lamp. This was applied, at a distance of 24 inches, to the cervical and dorsal region for 10 minutes. Pain disappeared and the patient slept for 12 hours. Treatment was repeated every 3 weeks. The patient was able to resume his occupation with comfort.—DR. F. DE KRAFT, of New York, in *Physic. Therap.*, Nov., 1931.

Diathermy in Interstitial Keratitis

A CASE of interstitial keratitis, which showed no progress from treatment by arsphenamine, atropine, dionin and bismuth, improved immediately on being subjected to diathermy. The method used was to place a small, padded electrode over the affected eye and a larger electrode on the back of the neck. A current of some 100 to 200 milliamperes was applied for 10 to 20 minutes. This was used every day, in conjunction with arsphenamine and local treatment.—DR. O. WILKINSON, of Washington, D. C., in *Eye, Ear, Nose and Throat Monthly*, Apr., 1932.

Galvanism in Rhinology

IN NASAL conditions, I find galvanism of great advantage. In rhinitis and ethmoiditis, a positive zinc ionization will effect a far more rapid recession of the condition than any other method today employed. In that form of dry sinusitis affecting the supraorbitals, which we so frequently meet, the application of a weak positive current, carried well up toward the ethmoid region by means of a delicate sound wrapped in cotton soaked in zinc iodide solution, will, in a large majority of cases, bring relief. In strictures it is far and away ahead of the knife.—DR. J. U. GIESY, of Salt Lake City, in *M. J. and Record*, Dec. 16, 1931.

Radium in the United States

IN the thirty years since radium was first discovered, only 288.4 grams (about nine ounces*) have been produced or imported in the United States. Of this quantity, 123.6 grams (about four ounces) are now in use in treating cancer and other diseases in public and private clinics (this is not nearly enough to meet the need), and about one ounce has been used in luminous materials. Radium now costs from $60,000 to $70,000 a gram (about $2,000,000 an ounce).—*J.A.M.A.*, Nov. 5, 1932, p. 1609.

Irradiation of the Parathyroids in Cystic Disease of the Bones

A CASE of extensive cystic bone disease of the lower right extremity, in a female patient with a history of hyperthyroidism, was markedly ameliorated by repeated roentgen-ray irradiations over the parathyroid region.—DR. E. A. MERRITT, of Washington, D. C., in *J.A.M.A.*, May 14, 1932.

*All parenthetical remarks are by the Editor.

RECENT ABSTRACTS

Roentgen-Ray Therapy in Chronic Sinusitis

Drs. F. E. Butler and I. M. Woolley, of Portland, Ore., in *Western J. Surg. Obstet. & Gynec.*, July, 1932, report 100 cases of chronic sinusitis treated by roentgen rays. The majority of these cases were referred by competent rhinologists, following unsuccessful medical and surgical therapy, and for the most part were those in which radical surgery was being considered as the only means of securing relief.

These patients have been under observation for varying lengths of time during the past 18 months. The results obtained thus far are: 30 percent cured, 50 percent improved and 20 percent unimproved.

The technic used has been as follows: 120 peak volts; 5 milliamperes; 10 inch distance; 4 mm. aluminium filter. Each sinus was irradiated separately for 10 minutes. Over the antrums a port, 1¼ inches in diameter, was used, and for the ethmoid and frontal areas the port was varied by means of lead foil to conform to the proper areas. The dosage thus given is 900 R units, as measured by a Victor instrument. The rays were directed in such fashion as to produce a cross-firing of the posterior cells when all the sinuses were treated.

The authors feel that roentgen-ray therapy, properly used in cooperation with a competent rhinologist, will greatly aid the recovery of better than 50 percent of cases of chronic sinusitis.

Massage

There is probably no therapeutic measure, the mode of action of which is so inadequately understood as massage. In *Arch. Phys. Therap., X-Ray, Radium*, June, 1932, Dr. R. Pemberton, of Philadelphia, stresses some of the underlying principles.

In general, massage, of itself, has no immediate or large effect on metabolism. The cumulative effect which it exercises on various metabolic processes probably lies in its mechanical influence on the circulation of the parts concerned. This influence on the local circulation also influences the circulating fluids of the body as a whole.

The influence of massage in the direction of an increase in the hemoglobin and red cells of the circulating blood is beyond question and there is also a limited but definite rise observed in the oxygen-carrying capacity of the blood.

The general effects of massage on the circulation are not, probably, brought about by mechanical agencies alone. There can be but small doubt that the nervous system contributes, under massage, probably through the sympathetic division, to a reflex influence on the blood vessels of the parts concerned.

In inactive individuals, massage compensates for lack of that contraction of the muscles of locomotion on the larger blood vessels that normally contributes to the return of the venous blood to the heart.

Massage is capable of promoting the removal of waste substances from muscles. The only medium of removal of these substances is the circulation, either of the lymphatics or the blood vessels. It follows, therefore, that the removal of these substances under the influence of massage involves an acceleration of those measures which nature, unaided, attempts. In elderly and feeble persons, this difficulty may express itself as a mild toxemia.

Direct, Internal Ultraviolet Irradiation of the Bladder

In *Arch. Phys. Therap., X-Ray, Radium*, June, 1932, Drs. J. R. Caulk and F. H. Ewerhardt, of St. Louis, report a method of directly introducing **cold-quartz** ultraviolet radiations and air to the urinary bladder, for the treatment of tuberculous and other infections. The radiations are introduced through an insulated, cold-quartz tube, designed by the authors.

The cold-quartz generator has a great intensity in the wave band of 2537 Angstrom units, which is well within the range of maximal bactericidal action.

In a case reported, of a tuberculous bladder on which was superimposed a *B. coli* infection, the authors started with a 5-second application of the rays, increased by 5 seconds daily for a week. The *B. coli* infection cleared up and there appears to be a positive effect on the tuberculous lesion, although it is too early to report definitely.

This appears to be the first attempt of direct application of ultraviolet radiations to the bladder.

BOOKS

Gál: Physical Therapy in Gynecology

PHYSIKALISCHE THERAPIE DER FRAUENKRANKHEITEN. Kurzes Lehrbuch für praktische Ärzte mit besonderer Berücksichtigung der Indikationen. *Von Privatdozent Dr. Felix Gál, Leiter der Strahlenabteilung der II. Universitäts-Frauenklinik in Budapest. Mit einem Vorwort von Prof. Dr. Stephan v. Toth, Director der II. Universität-Frauenklinik in Budapest. Mit 67 zum Teil farbigen Abbildungen. Berlin and Wien: Urban & Schwarzenberg. 1932. Price geh RM 8.50—; geb. RM 10.—*

A short textbook on the status of physical therapy in gynecology. It covers the physical measures suitable in this branch of the medical art, their general effects and applications in the particular diseases of women.

Gynecologists who habitually employ physical therapy and read German will find this special treatise comprehensive.

STOMATOLOGY

OFFICIAL ORGAN OF THE AMERICAN SOCIETY OF STOMATOLOGISTS

ASSOCIATE EDITOR: ALFRED J. ASGIS, *Sc.B., M.A., D.D.S.*

DR. ALFRED J. ASGIS

DR. ASGIS, the Associate Editor for this department, received his dental degree from the College of Dentistry, his science degree from Washington Square College, and his M.A. (in Philosophy) from the Graduate School, all of New York University.

Alfred John Asgis, D.D.S., Sc.B., M.A., F.A.S.S.

Early in his professional career, Dr. Asgis realized the importance of lay and professional education in the matter of oral hygiene and prophylaxis, as well as the importance of the stomatologic movement, and has spent much time and effort in working along these lines. He was formerly clinical professor of stomatology in the department of gastroenterology, New York Polyclinic Medical School and Hospital; chief of the pyorrhea clinic, Midtown Hospital; chairman of the committee on oral hygiene of the American Public Health Association and one of the founders of the American Stomatological Association and, later, of the American Society of Stomatologists (affiliated with the International Society of Stomatologists), of which last-named organization he has been secretary and editor, from its beginning to date. He has also been very active in various other lay and professional undertakings, in this country and abroad, including the International Academy of Stomatology, of which he is president, as well as being the official representative in America of the International Society of Stomatologists.

In addition to his lecturing and oral teaching, Dr. Asgis has been a prolific writer and has had a good deal of editorial experience, in connection with the *Review of Clinical Stomatology*, the *American Stomatologist*, the *Stomatologic Record* and other publications. His books include the first "History of Stomatology" and "Aes-

thetic Individualism," besides which he has contributed more than 200 articles, on scientific and philosophic subjects, to the periodical literature. He is a member of the American Dental Association, the American Association for the Advancement of Science, New York University Philosophical Society, American Congress of Physical Therapy, Dentists' Art Club of New York (past-president), Society of Independent Artists, and several other organizations.

Dr. Asgis has kept his mind open and active by riding a number of hobbies, notably portrait painting (his pictures have been hung in several exhibitions) and lecturing on philosophy and esthetics. These have kept him from being buried in the rut of his practice in stomatologic diagnosis and oral surgery, which he carries on in New York City.

WHAT IS STOMATOLOGY?

STOMATOLOGY is that branch of medical science which deals with the mouth and its component parts, in health and in disease. (From the Greek, *stoma*—mouth, *logos*—word, study or science). It concerns itself with the oral cavity as an organ, in its various bodily relationships, and embraces within its domain the care of the teeth, gums, lips, cheeks, floor of the mouth, palate, jaw bones, antrums, salivary glands, face and adjacent tissues.

The *science* of stomatology is the study of the normal and abnormal, in structure and function, of the mouth organs, either as cause or effect of local or constitutional disturbances or both within the mouth, the body or other organs. The *art* of stomatology refers to the means, methods and procedures employed by the mouth physician and surgeon to prevent oral disease, to maintain mouth health and to restore to normal function an impaired organ. The practitioner who engages in the practice of stomatology as a whole or in some of its phases is called a *stomatologist*. In America, physicians understand by stomatology an oral specialty in medicine, while the dental profession has been accustomed to use dentistry as a synonym of stomatology.

Having defined stomatology, we also want to know something about the stomatologic sciences that go to make up its body of organized and systematized knowledge, though meager it may be. The sciences of the stomatologic specialty are classified into three major groups: (1) The *fundamental* sciences are, stomatologic anatomy, physiology, hygiene, bacteriology, pathology, etc.; (2) *diagnostics* also includes roentgenology, clinical and physical diagnosis, laboratory and other aids; (3) *therapeutics* embraces: (A) *Medical therapy*, by the use of drugs, vaccines, dietaries, physical medicine, etc., for curative or prophylactic purposes; (B) *surgical therapy* is employed in the removal of teeth, cysts and tumors, the treatment of fractures, etc.; (C) *functional therapy*, otherwise known as prosthetic dentistry, is resorted to when mouth function is impaired, due to the loss of teeth or other causes, and is restored to normal by means of artificial substitutes.

While the stomatologist does all the *intraoral* work, he is aided by the dental mechanic, who prepares all the *extra-oral* work, as prescribed for him, in the mechanical laboratory.

This, in brief, is stomatology in theory and in practice, according to the biomedical plan that has been developed by American stomatologists during the past decade. The aim of this Department is to present the various clinical and laboratory problems of practical concern to the dental surgeon and other medical practitioners, with the hope of stimulating dento-medical cooperation on broader scientific lines and indirectly to bring about greater mutual respect between

the two professions, as equals in the work of healing.

In view of the prevailing confusion about dental educational reforms and the uncertainty about the status of American dentistry, we believe that the announcement of the inauguration of a Stomatology Department, in one of our most progressive international medical publications, will be enthusiastically received, both by the dental and medical fraternities, for this marks another forward step toward the universal recognition of dentistry as a specialty in medicine.

It is indeed significant that, at the end of the first decade of the stomatologic movement, CLINICAL MEDICINE AND SURGERY becomes the official scientific publication of the American Society of Stomatologists, which alone stands uncompromisingly for a united dentistry as an accredited specialty of medical practice.

We are happy to announce the support of our department by prominent dentists and physicians' and we appeal to all who strive for scientific progress to cooperate with us in the development of Clinical Stomatology. A. J. A.

The Functions of the Dental Department in the General Hospital

By Leo Winter, D.D.S., New York City

Professor of Oral Surgery, New York University, College of Dentistry; Director, Dental Department, Bellevue Hospital; Lecturer on Oral Surgery, N. Y. Homeopathic Medical School, etc.

OPINION prevails that hospitals are considered less and less as progressive or safe institutions in which to treat the sick, unless they are distinctly educational institutions. Dr. Colwell believes that their excellence in respect to any particular function will depend directly on "the extent to which they fulfill all their other functions."[1] A considerable number of hospitals are engaged in the education of nurses, many have interns and a smaller number provide teaching facilities for medical students. An increasing number are now providing graduate teaching facilities for general practitioners, as well as special residencies for those who are preparing themselves for the practice of specialties.

The functions of the modern hospital extend beyond being an institution of charity for the rendering of aid to the indigent, the poor and the sick, in periods of distress. True enough, the modern hospital aims to give direct service to the sick. As an educational center it aids in clinical investigation and also serves an educational purpose. The progressive status of dentistry as an oral health service, makes the hospital a suitable institution for the advancement of clinical dentistry along the lines of the three hospital objectives: service, research and education.

ORAL HEALTH SERVICE RECOGNIZED

A consideration of what place the dental department is to occupy in a general or special hospital, presupposes a need of such a department for the hospital's efficiency. In the general hospital, where patients with all types of ailments are cared for, there is unquestionably a need for dental care, from the standpoint of diagnosis, hygiene and treatment. It is now generally recognized by medical and dental science that potential and active oral foci of infection should be eradicated in sick and apparently well patients. This most especially applies to the hospitalized patient. In the special hospital, where only certain types of patients are cared for and where the dental needs are attended to outside of this particular hospital, the problem is quite different. In the special hospital oral care may be arranged and provided for by the patient.

The hospital that provides high-quality service cannot claim to live up to the desired standards, if patients are not cared for dentally in this institution. It is inconceivable, today, to consider a physical examination complete without a thorough

mouth examination. This implies the need of an active department, as is the case with the established facilities in other medical departments of a well-equipped, up-to-date hospital. No medical treatment may be considered complete or thorough unless the oral cavity is cleared of possible sepsis and placed in a hygienic condition. It is certainly imperative that no patient receives a clean bill of health unless that bill includes the dental item.

A considerable number of hospitals in the United States have followed a progressive course and have established dental divisions. This was in response to the public demand for scientific medical care of hospital patients. The progressive institution also realizes that the benefits, to the patient, the community and the hospital, of the dental service are too many to permit failure to give it due recognition.

Dr. Goodale presents an outline of the new scheme carried out at the Buffalo City Hospital, where dentistry is made part of the program. He outlines an educational program for an up-to-date general hospital:[2]

1.—Teaching activities for the benefit of the patient.

(a) Care and treatment of disease.
(b) Prevention of disease.
(c) Vocational.
(d) Cultural.

2.—Postgraduate and undergraduate teaching activities for:

(a) Physicians.
(b) Dentists.
(c) Dietitians.
(d) Nurses.
(e) Technicians.

3.—Research.

Hospital Dentistry

Hospital dentistry covers, in the main, all phases of clinical stomatology bearing on the protection of the function and structures of the oral cavity as a whole. The out-patient department at Bellevue includes diagnosis with the various aids at our command, especially the x-ray examination. In our treatment we include the removal of incurable teeth, oral surgical operations, the various types of cysts, impactions, growths, etc. The treatment of pyorrhea, whether with the socalled conservative or the surgical method, is part of our departmental function. In some dental departments attention is also given to reparative work, which includes all phases in operative dentistry for the purpose of restoring to the teeth their proper chewing surfaces. Prosthetic restorations or reconstructive work is planned with the object of restoring mouth function of the dental mechanism and as an aid in mastication and, indirectly, digestion. This service is rendered at the teaching clinic of New York University, with which institution we are affiliated. In children's work we employ prophylactic fillings for the preservation of the first permanent molar and the permanent teeth. Diagnosis and treatment for children is of high quality. Prophylactic, operative and restorative work on adults is limited thus far in Bellevue Hospital Dental Clinic to the patients referred by the Cardiac Clinic of Dr. John Wyckoff. As funds will permit, other such clinics will be organized, as pre-natal and tuberculosis clinics.

Then we have the hospitalized patient. What type of oral patient should be hospitalized, is a new problem that calls for study. Depending upon the social-economic status of patients and the severity of the condition requiring medical or surgical care, we may classify them into two groups: The emergency group, where immediate surgical intervention is necessary. Besides adults we include here the child patient of the urgent kind, those who need extractions particularly; the observation group, who may need medical care and conservative treatment. Hospital personnel represents a third group of patients to whom service may be suitably rendered by the dental department.

In my text, I indicated a variety of conditions, especially accidents and infections associated with postoperative complications, that may well be cared for at the hospital.[3]

Consultation Between Physician and Dental Surgeon

Hospital executives are beginning to appreciate the value of a dental department, as pointed out recently by Dr. E. M. Bluestone, director of the Montefiore Hospital, who considers this service as an asset and an obligation.[4] He considers that the function of the dental department, as "a service for clearing up foci of infection and putting a patient's mouth in hygienic condition should include: first, reference of all patients to the dental department; second,

mouth examination, including x-ray study of all the teeth; third, necessary surgical and mechanical work recommended by the dentist; and fourth, consultation between the physician and the dentist."

The very nature of hospital dentistry calls for the correlation and cooperation between the various departments of other specialties of the same institution. The efforts toward improvement in diagnosis and treatment by the staff automatically call forth a spirit of cooperation among the attending dentists, who act as advisers and consultants. The spirit of general cooperation is fostered and thereby raises the morale of the entire institution. This spirit becomes a part of the practitioners, which is automatically transferred from the hospital atmosphere to private life. The profession, in general, reaps the benefit. Hospital dentistry is probably a more practical means of stimulating cooperation between dentists and physicians than any other agency hitherto devised.

The Dental Surgeon's Place in the Hospital

Dr. R. L. Wilbur, in an address before the fiftieth anniversary dinner of the New York Post-Graduate Medical School and Hospital, pertinently remarked about the needs of the modern physician[5]:

> "Within three decades, American medicine has been made over. The commercial medical school, operated profitably on students' fees, has disappeared. The laboratory has won its way into every department of the medical school, as well as the hospital. Empiricism has largely succumbed to the scientific method. The doctor who is working today with the education given him thirty years ago belongs in the antique shop. The doctor's growth must go alongside that of his profession. The doctor who does not read the current medical journals, follow the activities of the various medical societies and attend occasional clinics is not a good public servant. The doctor's life is one of clinical experiences, study and reflection, and association with his fellows."

This picture almost perfectly fits our profession. Dentistry has been revolutionized in the past two decades, by virtue of the progress we made in surgical and medical stomatology. Dental students are receiving, today, a thorough grounding in the fundamentals of the medical and surgical sciences. Our senior students are given opportunity to witness major surgical operations at Bellevue Hospital and to perform minor surgical work at the University Clinic. The recent graduate brings with him to his practice a surgical conception of mouth health and disease that fits him adequately to perform his duties as a professional man and public servant. He not only seeks hospital affiliation, but he needs hospital contact in order that he may keep fit and up-to-date. I understand that only about 10 percent of the 5,000 hospitals in the United States have dental departments.

The dental department has won its rightful place in the general hospital, not only by assignment, but also by its good service. While no standards for the hospital dental department have been set up so far, it may be said that its major functions, either in the ward or outpatient division, are: (1) Diagnostic; and (2) Medico-surgical. To function efficiently in this capacity, it is in the interest of the hospital administration to provide the necessary facilities and proper equipment for its twofold service. A dental department should include an examination room, an x-ray and developing room, an operating room for minor surgery and one for major surgery, with facilities for the administration of gas anesthesia. These provisions are, of course, to be adjusted in accordance with the actual needs of the hospital. With such facilities at the disposal of the medical and surgical staffs of other departments, cooperation in oral diagnosis and treatment becomes a matter of daily routine, with resulting benefits to all concerned. With adequate facilities in this respect, I have no doubt that every dental surgeon will be as prominent at the hospital and clinical conferences as is the case with other medical specialists.

At Bellevue Hospital, where a dental department has been functioning for some time, hospital dentistry has passed beyond the experimental stage. Our service has proved its value to the hospital, to the members of the staff and to the community. In our institution, dentistry is recognized on an equality basis with other departments. This is a credit, not only to us, but to the dental profession everywhere. This was possible because of the progressive spirit of Dr. Carl G. Burdick, director of the Fourth Surgical Division at Bellevue, because of his vision of a better and greater dentistry, and I feel that the dental profession owes Dr. Burdick an everlasting debt of gratitude. It is to his credit that we have the honor of setting an example of real and practical cooperation between physician and dentist in a hospital environ-

ment. Undoubtedly, other institutions, with their progressive medical staffs, will accord our profession similar opportunities and recognition, which eventually will result in an improved service to the community.

The hospital dental department has many advantages for the dental and medical professions. It provides proper supervision for the actual treatment. The clinical material thus gathered, in the form of clinical records, is added to the literature. It serves as a stimulating agency in developing new methods and procedures, and adds new material. The hospital dental department acts as a crucible for progressive ideas and becomes a medium for the advancement of clinical stomatology.

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140 W. 58th Street.

NOTES AND ABSTRACTS

Newer Aspects in Paradentosis (Pyorrhea)

In *Ann. Intern. Med.*, July, 1932, Dr. H. Becks, of San Francisco, calls attention to the term, paradentosis, which replaces the old term pyorrhea. All the known forms of the disease have been included in the accepted new classification, as follows: (1) Marginal suppurative gingivitis (pus at gingival margins without distinct pocket formation); (2) paradentosis (deep pockets, with or without loosening of the teeth); (3) alveolar atrophy (presenile and senile atrophy).

The paradentosis problem is a part of the constitutional problem. The individual disposition forms the nucleus of the susceptibility to paradentosis.

There are two fundamental forms of paradentosis; First, that which is characterized by an inflammatory disappearance of marginal tissue; and second, one with a generalized tissue destruction. In his present article the author deals with the latter only.

The great majority of cases of paradentosis investigated by the author during the past year showed an increase of serum-calcium; the inorganic phosphorus content was decreased in 50 percent of the cases and was about normal in the others. In about 90 percent of the cases, the saliva showed decreased calcium.

Clinically, bone substance is being lost and, biochemically, there is hypercalcemia which, in most cases, is not accompanied by an increase in the blood phosphorus, resulting in a relatively high calcium-phosphorus quotient and a low potassium-calcium quotient.

The changes may be interpreted to mean that either an endocrine disturbance, a deficient diet, infectious or other metabolic diseases, mobilize calcium salts from the bone and perhaps from the teeth.

Diathermy in Dentistry

EXPERIMENTAL investigations have proved without doubt that surgical diathermy can sterilize infected periapical tissue and the contents of the root-canal in a remarkably short time. Surgical diathermy in root-canal treatment reaches first those spots which can hardly, if at all, be reached by chemico-mechanical methods, and sterilizes in 3 seconds. When used rightly, no accidents, no burnings are to be feared.—DR. J. H. R. SCHLYECHER, of Baarn, Holland, in *Dental Cosmos*, Jan., 1932.

NEWS NOTES

Stomatologists to Meet

The American Society of Stomatologists will celebrate the tenth anniversary of the stomatologic movement in America at its annual meeting, at the Hotel McAlpin, in New York, April 27 and 28, 1933. The first day will be devoted to a general session and the second to an executive session and clinics.

For full particulars, write to the secretary, Dr. Alfred J. Asgis, 310 W. 72nd St., New York City.

A LIVING FOR THE DOCTOR

BACTERIOPHAGE AND ANTIVIRUS

THE time has come when all physicians who hope to meet the pressure of the times successfully must familiarize themselves with the accredited newer discoveries in medical *science*, and *use* them intelligently in the practice of the *art* of clinical medicine. The bacteriophages and antiviruses now fall in this category.

In the August, 1932, issue of CLIN. MED. AND SURG. (p. 587), we published a discussion of these relatively new medicaments, from the standpoint of the technician. This editorial is intended to hook up the technical information there presented with modern ideas of physiology and with clinical practice.

Turning, for the moment, to Metchnikoff's theory of immunity, and adding the results of modern research, there are two types of body defenders: the phagocytes, which constitute the shock troops or first line of defense, and the histiocytes—the reticulo-endothelial system (which has nothing to do with the endothelium)—the heavy troops of the main army. It seems quite possible that Ehrlich's hypothetic "antibodies," of various sorts, may have as their sole or chief function the activation of these cellular elements.

The polymorphonuclear leukocytes, which are greatly stimulated by nonspecific proteins and other things, eat up bacteria, perhaps altered by the agglutinins, precipitins, amboceptors, complements and other things of Ehrlich's category. The histiocytes do the same, and also phagocyte particulate inorganic matter (such as coal dust) and dead "polys," stuffed full of bacteria they have eaten.

Bacteria, when growing unchecked, produce waste substances which, when sufficiently concentrated, will kill them. This is the basis of the antiviruses, which are *strictly specific* for the organisms from which they are produced and which stimulate the histiocytes. So far, we believe that they cannot be made for all organisms—at least not yet.They are *tissue specific*, also, and produce a tissue-localized immunity, as in the skin and mucous membranes. When applied topically, the action is rather brief; when given *intradermally*, in doses of 1 to 5 minims, it is more durable. They should *not* be injected subcutaneously. It is possible to immunize a human being against bacillary dysentery by giving the specific antivirus by mouth.

Antiviruses should not be injected intradermally twice in the same locality. If this is done, local tissue necrosis, with sloughing, is liable to result.

Autogenous antiviruses are, as yet, impracticable, so stock preparations are the answer. They are now available, commercially, for streptococci, staphylococci, colon bacilli, dysentery bacilli and several others. Interesting experiments are being carried out with gonococcus antivirus and probably other different organisms.

There are many who think that the antiviruses come near to realizing the dream of an ideal local dressing to limit infections

and vitalize tissues — always remembering that they are *strictly specific*. The clinical results in *furunculosis* are dramatic, and also in localized, superficial infections of several types. *Mastoid wounds*, packed with gauze soaked in antivirus, show favorable results within eight or nine hours. A stock staphylococcus or mixed respiratory antivirus, dropped into the nostrils at frequent intervals, will sometimes clear up *chronic nasal infections* in two or three weeks. Other specific applications of the idea will readily suggest themselves.

Bacteriophages, while they look much the same as antiviruses and are applied in the same way, are quite different in their nature and action. It may be that bacteriophage will prove to be an enzyme, as some now believe, but it gives many evidences of being *alive*, as is maintained by its discoverer, d'Herelle; for example, it has the power of reproduction, which is generally regarded as characteristic of living organisms. In any case, it possesses the ability, not merely to inhibit or kill the bacteria for which it is specific, but to *destroy them completely*, by lysis.

While strictly organism-specific, polyvalent bacteriophages are now available which will lyse a number of different *strains* of staphylococci, for instance, but not *any* bacteria or streptococci.

Like antivirus, bacteriophage may be given by mouth, applied locally and injected intradermally. In addition, it has been injected subcutaneously and intravenously, in certain conditions, by some workers.

The first organism with which d'Herelle worked was that of *bacillary dysentery*; and results with this phage (when it is properly prepared and potent) have been dramatic, in the hands of a number of workers. It has also been proved to have distinct value in the treatment of *sprue*. In other gastro-intestinal diseases, such as *cholera*, acute and chronic *intestinal infections* (but *not* in ulcerative colitis) and *infantile diarrheas*, appropriate polyvalent, stock phages have done good work. In these conditions, the phage is given by mouth, in doses of 2 cc., one to three times a day (to an adult), according to the condition of the patient and the progress of the case.

In many types of suppurative conditions, the local use of polyvalent staphylococcus or streptococcus phages (according to the organisms present) has produced gratifying results. In *furuncles, carbuncles*, and even in *acne pustules*, it is injected directly into the lesions, which are then covered with a gauze dressing wet with the phage. Similar wet dressings have also been used successfully in infected and suppurating wounds.

In *septicemia, phlegmon and osteomyelitis*, slowly-given intravenous injections of the appropriate phage (determined by bacteriologic studies) have saved lives which would probably, otherwise, have been lost.

Genitourinary infections have frequently yielded to the local application of polyvalent, stock *B. coli* phage, alone or combined with staphylococcus phage. In uncomplicated *cystitis* 10 to 20 cc. of the phage, diluted in 50 cc. of saline solution, is instilled into the bladder and retained as long as possible. In *pyelitis* the instillation is made directly into the pelvis of the kidney, about 5 cc. being used.

This brief discussion cannot, of course, cover the whole field, but it should be sufficient to suggest to the alert clinician that here is a field of therapy which has, so far, been little worked, and which gives promise of yielding rich returns, professionally and financially.

G. B. L.

The Injection Treatment of Hernia

By F. D. LaRochelle, M.D., Springfield, Mass.

MANY physicians are failing to earn and to receive satisfactory incomes, because they are overlooking or referring many types of work which, with a reasonable expenditure of time, effort and money, they could fit themselves to do satisfactorily.

One of the office procedures, which any physician who is familiar with anatomy and parenteral methods of medication, and reasonably dextrous with his hands, can learn and practice with great satisfaction to his patients, as well as to himself, is the injection treatment of hernia.

In a recent paper it is stated that recurrences after operations for inguinal hernia should not exceed 1½ to 2 percent, and that the mortality should not be over 1 in 1,000. Mayer reports permanent relief in 98 percent of inguinal hernias by the injection method. This would certainly make it appear that the hernia problem was solved, for it is doubtful if operations can ever be done with a mortality of much less than 1 in 1,000; and 98 or 98½ percent of definite cures leaves little to be desired.

These statements, however, seem to be over-optimistic, and I should put the average of good results from operation much lower than this. At the Interstate Congress in Minneapolis, in 1930, Deaver reported 8 percent of recurrences in his clinic, and certainly these could scarcely be attributed to want of technical skill. I believe the statement that, of all operations for inguinal hernia, 50 percent show good results; 25 percent fair results; and 25 percent bad, would be much nearer the truth, and it is for these last 50 percent that I would advocate injections.

It cannot be safely affirmed that the injection treatment has gained much favor, and I believe the reason for this is that surgeons are not acquainted with this method. The injection treatment has much in its favor, if the results are good, but since there are yet a number of points to be cleared up I think we are safe in saying only:

1.—That an inguinal hernia can be cured by injection.

2.—That the permanency of the cure is not yet definitely established.

Indications

If we are to accept the injection method, what shall be the indications? It appears now that any reducible hernia that can be held by a truss can be treated by this method, but the fact that it can be so treated does not necessarily mean that this will always be the treatment of choice. In a young man in good condition, operative measures are so successful and the inconvenience of an operation so small that we might well consider that the method of choice. Also, in incisional hernias, we might hesitate to use the injection treatment, since a large number of injections are necessary and it is in this type that complications are most common. But in small inguinal hernias, either direct or indirect, and in femoral hernia, it appears that the injection method has very attractive features, so that, in every case, it should at least be considered, even if we do decide that operation is better.

It cannot be emphasized too much that the injection method is applicable only to reducible hernias that can be held by a truss. Nothing but disaster could result from an attempt at curing a nonreducible hernia by injection. In order to establish beyond doubt that reduction has taken place, a truss should always be worn for a week or two before beginning treatment, so as to make sure that the method is indicated and exclude the possibility of the existence of any complication that might contraindicate the injection method.

Solution

Once the indication is recognized and a truss has been worn, the first problem to arise is the matter of solution. This is of greatest importance since, with a good solution, the result is swift and sure, while with a poor one failure is almost certain to result. There is no unanimity about the choice of solution at this time. Most observers have used special formulas, among which are those of Piña Mestre and Mayer. The one that has given me the best result,

with the least inconvenience, is the following:

℞ Zinc Sulphate 5.0
Phenol 25.0
Glucose 25.0
Quinine and Urea
Hydrochloride 2.0
Water and solvent to make....100.0

The zinc, phenol and glucose are sclerosing agents, while the quinine and urea gives a prolonged anesthesia, making the reaction much more comfortable.

The next question is, how much solution should we use? I advocate beginning with 5 minims. As a rule, the reaction from this quantity is minimal, but every now and then a patient will be encountered who reacts more than usual, and so it is always wise to begin with a small dose. Injections are given weekly and increased a few minims each time until 15 minims are reached. This quantity is usually sufficient and more only makes the patient uncomfortable, without any corresponding advantage. I have used as much as 30 minims, but this quantity should be injected only after the patient's tolerance is definitely established, and even then only with great circumspection.

Technic

There seems to be a great deal of confusion about the technic of making injections. It appears to me that the technics described by a number of observers are needlessly complicated. I advocate subcutaneous injections, aiming as much as possible to deposit the solution just over the fascia; with more experience one can go through the fascia and enter the inguinal canal, but this is not absolutely necessary, as the inflammatory tissue extends in all directions, to a distance of several inches from the site of injection, and effectively fills the canal, as well as the rings, with inflammatory tissue. The only advantage of injecting directly into the inguinal canal is that the result is more rapid, but this, necessarily, is at the expense of safety. Since the injection method is not yet definitely established, it is better to be conservative, take a little more time, if necessary, and avoid complications as far as possible.

I originally used a simple hypodermic needle and syringe, but I later found that a 1½ inch, 23-gage n "2, with a Luer-Lok syringe, was much better. The needle should be kept sharp with a small hone, supplied for that purpose by manufacturers of needles. This is very important for, after the first injection, the tissues are tough and rapidly dull the point, causing needless pain on passing the needle through the skin. When the injections are properly made, there is little or no pain and the subsequent discomfort, extending over a few days, is so little as to be practically negligible. Needless to say, the strictest aseptic precautions should always be used.

Before making the injection the patient is placed on the table and the hernia reduced, if necessary. Once the injection has been made, the truss is applied before the patient gets up and he is instructed to wear the appliance night and day, so as to prevent the sac from being distended, which would necessarily delay the adhesive process. After 4 or 5 injections, as a rule, the truss can be removed at night. Later it can be put aside for parts of the day, until it becomes evident that the scar tissue in the hernial canal is sufficiently firm to hold the hernia. Even then it is wise to have the patient wear a supporter for a time or, if he does not, he should at least make pressure over the canal when coughing or sneezing, to prevent any undue strain.

Patients beginning treatment invariably ask how many treatments will be necessary to effect a cure. I always tell them that it is not possible to state the exact number but that, as a rule, after 10 or 12 treatments there is a pronounced change—in fact, that a cure is accomplished in most cases—but, by leaving that question open, the treatment can be continued over a period of weeks or months, at longer intervals. This permits better observation of the patient, and he should not be discharged until all possibility of failure is definitely settled. I always tell my patients that if, after six months or a year, they should note some weakness, they must return for a few injections and, in case this is necessary, it should not be spoken of as recurrence, but as the result of insufficient treatment.

Complications

The usual complications are abscesses. When these occur, they may be cured, as a rule, by aspirating with a large needle, and it is not necessary to make an incision.

In four instances I have made injections into the peritoneal cavity. This causes

severe pain and mild shock and all precautions should be taken to avoid this.

Occasionally, if the injection is made too near the cord, thrombosis will result, but this usually subsides in a few days.

In some cases I have noted hydrocele of the cord, and this usually disappears but, if it does not, the transudate can be aspirated.

On one occasion, when I was using a tannic acid preparation, there was a severe urticarial reaction, but this disappeared in an hour without further inconvenience.

One patient, with an incisional hernia, developed a faecal fistula. This, of course, was an unpleasant complication but, since far worse events than that result from operations at times, one need not be alarmed. The fistula healed spontaneously, but even if operation were necessary in an occasional case, the advantages of the injection method would not, even then, be neutralized.

The injection method is really a surgical procedure and necessitates special training on the part of the operator. Medical men who do not, themselves, operate should establish close relations with a surgeon whom they might consult in case of necessity before beginning treatment, so as to seek expert advice without delay in case of doubt.

Advantages

The advantages of the injection method are:

1.—There should be no mortality.

2.—The patient can continue his occupation.

3.—Any complication that might occasionally take place is usually not serious.

4.—The cost is much less than that of an operation.

5.—If recurrence does take place, it can be remedied at the cost of a minimum of time and inconvenience.

These are certainly imposing features, but we should not be carried away with enthusiasm. With a comparatively little-known method, it is much better to make only very conservative claims and let the good results speak for themselves.

About the outlook for this form of treatment, I believe it is very promising. The technic is not difficult. In fact, any well trained physician can begin with easy cases after a few hours instruction, and then he can see for himself what can be accomplished.

It is a striking fact that many physicians, and especially surgeons, suffer from hernia and it is my experience that they, themselves, prefer the injection method. If that is the case, why would we not advocate this method in suitable cases for our patients?

Economic Factors

As to the business side of the injection of hernia, my position is that the efficacy of this treatment is not yet completely established, so we should progress with great circumspection. My practice is not to emphasize this feature. I invite a patient to take this treatment and see for himself what can be done, and when I accomplish a cure I then agree on the fee. I think $100 a fair fee for a cure, and when I fail, as I occasionally do, I simply forget about the fee.

In some instances I make this sort of agreement in the first place. For example, I have now a patient under the state compensation law and I made an agreement with the insurance company that, unless I could produce a cure to their satisfaction, there would be no charge; but, if I did get a good result, they would give me $100. With a little good will, there should be no difficulty at reaching a satisfactory arrangement and I would strongly advise physicians not to allow themselves to accept a fee and later find they were unable to effect a cure. I should very much prefer to lose a fee here and there than be placed in a humiliating position.

The practice to follow will naturally vary with the physician, type of patient, etc. When I have been able to obtain a cure, the patient invariably pays cheerfully; but since I do not believe that cures can regularly be obtained by all operators in 98 percent of cases, as Mayer says, I advise caution.

89 Belmont Ave.

NOTES AND ABSTRACTS

19 Tests of a Collection Agency*

YOUR next caller may be a collection agency representative. Are you ready for him?

Here are 19 questions to which every ethically operated collection agency should be willing to reply. Have these questions conveniently at hand, and tell the representative that before he can do business with you, the answers must be returned in writing by his company. This will save you time and money.

If he has been sent to you by a dishonest agency, he will say that you are making an unreasonable demand. You will never hear from him again. If, on the other hand, his concern is a thoroughly reliable one, it will not only answer the questions, but will welcome the opportunity to display the merits of its service. You will make the agency realize that it is dealing, not with an easy mark, but with a business man whose eyes are open. The questionnaire thus emphasizes both the moral and the technical obligations of the collection company.

1.—Name and address of company (with location of branches).

2.—History of company and date of organization.

3.—Are any officers of your company connected with other collection agencies? If so, explain the connection in full.

4.—What features does your company offer that are not offered by other collection agencies?

5.—Of total cases submitted to you by physicians for collection during the past calendar year, what percentage did you collect?

6.—Do you collect by mail or personal call?

7.—How many collectors are employed by you to collect physicians' accounts?

8.—What commission or salary do you pay your collectors?

9.—Do you require the physician to sign a contract? If so, are you willing to have the contract submitted to a lawyer?

10.—Is the physician allowed to retain a copy of your contract with him?

11.—Do you, at specific intervals, remit in full for every cent collected? If so, how often?

12.—Do you acknowledge promptly in writing all claims received for collection?

13.—Do you receive any money for your services until money is collected?

14.—Do you charge a fee for an uncollected account which the physician decides to withdraw from your service?

15.—Do you notify the physician whenever legal action is to be taken to recover a claim?

16.—Do you report the status of any account when the physician requests it?

17.—Do you grant the physician the privilege of inspecting in person any and all records in connection with his accounts?

18.—Do you use any methods, letters, or forms which might in any way involve or bring discredit upon the physician?

19.—Attach the following:

a.—Copies of sales literature used.

b.—List of banking references.

c.—Your complete schedule of collection fees.

d.—Names and addresses of 10 physician-clients willing to vouch for your service.

WILLIAM ALAN RICHARDSON.

*From *Med. Economics*, June, 1932.

BOOKS

Ross: Medical Advertising

MEDICAL ADVERTISING; *A Preliminary Review of Recent Advertising concerning Medical Service and Public Health, conducted by County Medical Societies, Public Health Agencies, Hospitals, Clinics, and Business Organizations. By Mary Ross (Concluding Chapter by Michael M. Davis). Published by Julius Rosenwald Fund*, 1932.

Within the past few years, certain units of Organized Medicine have debated the desirability of, or have actually engaged in, collective advertising for public information and guidance.

In this pamphlet, prepared under the direction of the Julius Rosenwald Fund, the educational advertising activities of Public Health Agencies, Medical and Dental Societies, Insurance Companies, Hospitals and Clinics, for the past decade or so, is reviewed and discussed and, so far as possible, the opinions of the advertisers in regard to results obtained have been secured and are published. Any physician may obtain a copy free.

THE · SEMINAR

[NOTE: Our readers are cordially invited to submit fully worked up problems to the Seminar and to take part in the discussion of any or all problems submitted. Discussions should reach this office not later than the 1st of the month following the appearance of the problem.

Address all communications intended for this department to The Seminar, care CLINICAL MEDICINE AND SURGERY, North Chicago, Ill.]

PROBLEM NO. 11 (1932) MEDICAL

Submitted by Dr. Hugh D. Stites, Aledo, Ill.

(See CLIN. MED. AND SURG., Nov., 1932, p. 801)

Recapitulation: A girl of three years had an attack of severe headache, with fever (102° to 103°F.), vomiting and severe general abdominal pain. After three days all symptoms were relieved.

A maternal uncle suffers from migraine; her father has urticaria; there is no history of malignant disease, tuberculosis or nephritis.

The child weighed 11¾ pounds at birth, was breast-fed, developed normally and has had no serious infectious disease. She is now nine years old and has had attacks similar to the first one every three or four months, in two of which there was also a generalized rash. Between attacks she has seemed entirely well.

When first seen she appeared undernourished and acutely ill; temperature, 101.5°F.; pulse, 110; retinal vessels constricted; right tonsil enlarged and infected; marked abdominal tenderness and rigidity, especially in the left lower quadrant; otherwise negative (including Kahn test and blood study), except for skin sensitiveness to almonds, peas, eggs and cheese.

Requirement: Suggest diagnosis and treatment.

DISCUSSION BY DR. A. L. SCHNEIDER, BRADY, MINN.

According to the history, this girl was unusually large at birth, hence she probably was delivered after a difficult labor, suggesting the possibility of some intracranial injury. The constricted retinal vessels seem to indicate some degree of intracranial pressure, which would manifest a very sensitive cerebral reflex center.

Due to this impairment, she has sensitive, under-developed visceral organs, any slight dysfunction of which would produce cerebral congestion; then the intracranial pressure symptoms, intestinal stasis, toxic absorption, headache and vomiting, which often is followed by the toxic eruption, as indicated in this case.

Roentgenologic study of ths case might show a definite cerebral lesion.

Diagnosis: *Chronic enteritis*, due to hypercephalic irritation.

Treatment: *Abortive and curative*:

1.—Protect the girl from strong emotional influences, especially anger.

2.—Plenty of rest; keep from over-tiring.

3.—Plenty of sunlight and moderate exercise.

4.—Diet; feed 4 or 5 times a day, not too much at one time; good, mixed food; plenty of fruit, milk and vegetables; heavy and concentrated food, sparingly; *no over eating*.

5.—Keep bowels active with an occasional dose of castor oil or calomel, followed by milk of magnesia.

During attack:

1.—Sodium bicarbonate enema, repeated every 2 hours until result.

2.—After active enema, give castor oil.

3.—Control headache and vomiting with aspirin compound, mixing the contents of a capsule in a half-dram of elixir phenobarbital, and give every 1 to 2 hours to ease.

4.—Next day, repeat the castor oil or give calomel.

5.—To follow up, I would recommend a mixture of milk of magnesia in a good digestive elixir.

DISCUSSION BY DR. I. L. SHERRY, CHICAGO, ILL.

Without a number of additional findings besides those mentioned by Dr. Stites, I cannot make a diagnosis. It is evident that Dr. Stites suspects an allergic basis for these attacks, because he mentions a family history of migraine and urticaria, and a history of a generalized rash in the patient during attacks. Also, he finds her sensitive to certain articles of diet.

The additional findings which would help to establish the diagnosis of allergy, "intestinal migraine," or what have you, are a leukocyte count, including a differential, during an attack, and an injection of epinephrin, by way of therapeutic test.

Acute appendicitis has not been conclusively ruled out. Acute tonsillitis in a child is often associated with abdominal pain, nausea and vomiting. This is also true of other acute infections of the upper respiratory tract. One should also consider the possibility of acute intestinal toxemia: As far as I can see, this has not been ruled out as a cause of these attacks.

DISCUSSION BY DR. HERMAN J. KOOIKER, MILACA, MINN.

Leaving out of consideration for the moment the question of sensitization or allergy, as manifested in this case by the rash, which appeared during two of the attacks, and the positive skin tests, there comes to mind at once "cyclic vomiting." Referring to the textbooks on Pediatrics by Holt and Kerley, it is noted that the descriptions there given dovetail in all essentials with the problem before us. In the light of the knowledge at that time, these attacks were considered as explosions due to faulty metabolism, not in the nature of acidosis, but toxemia plus acetonuria.

It is noteworthy that Holt called attention to the fact that these attacks have much in common with migraine which, in later life, not infrequently replaces the attacks of vomiting. He says also that some of these cases have acholic stools, which points to the liver as the organ which is the basis of the faulty metabolism. The migraine picture, with toxemia, severe headache, "biliousness," etc., also reminds us of a hepatic disorder.

Harrower, in his book, "Practical Endocrinology," points out that the endocrine aspects of migraine are taking the place of the purely neurologic and toxic bases previously considered necessary to the etiology. It has also been shown that there is a close similarity between migraine and urticaria, and migraine has also been definitely connected with allergy.

Perfected knowledge of the endocrine character of the liver has sufficed to show that migraine is primarily and essentially endocrine in character—that either directly or indirectly it involves a liver dysfunction. Thirty-five cases of abdominal and cephalic migraine, reported by Diamond, were all shown to have definite liver disturbance, the liver being unable to detoxify putrefactive substances derived from animal proteins in the intestinal canal. The resulting symptoms were considered as an allergic reaction.

McClure and Huntsinger showed other variations of the idea of the hepatic character of the basis of migraine. They state that disturbances in lipoid metabolism, abnormal state of the liver function and positive protein sensitization reactions are definite pathologic findings that have been demonstrated in migraine. Here, then, is the reason for Kerley's statement that milk fats, sugar and egg yolks should be withheld from the patients afflicted with "cyclic vomiting."

The diagnosis suggested in the beginning as "cyclic vomiting," now becomes, quoting from Harrower, a toxemia due to lowering of the "liver barrier." Material that should have been disposed of by the hepatic cells enters the general circulation, accumulating beyond a certain concentration in the blood and establishing varying syndromes, even at varying times or attacks, and based principally upon the migraine picture.

As in the case of migraine, when an attack is in process, treatment is not of much avail, therefore it should be directed to the interval. Inasmuch as diet alone has, in many cases, markedly prolonged the interval between attacks, sugars and fats should be eliminated and vegetables and cereals should be the main food.

A liver-stimulating cathartic (blue mass pill) should be given once a week, at night, followed in the morning by a saline laxative. As a further systemic measure, a dram (4 Gm.) of sodium sulphate, plus 5 grains (0.325 Gm.) of sodium salicylate, in a tumberful of hot water, should be sipped

each morning on arising.

Because calcium salts are generally acknowledged to be of considerable value in allergic reactions and are required for normal cellular metabolism, I should also prescribe Calcium Phosphorous Co. (Harrower), one or two tablets of 1 gram each, crushed, with plenty of water twice daily, one hour before meals.

Discussion by Dr. Jerome J. Weil, Chicago

This girl has an undoubted case of allergy, but in this particular instance this manifestation is of comparative unimportance in the consideration of the primary difficulty present.

The report of the urine and blood examination being normal is not sufficient information on these items, as no mention is made of the leukocyte count or of a differential count or of a blood smear for a possible parasite having been made.

From the character of the history given and the rather definite regularity with which the symptoms recurred, their apparent short duration and seemingly normal periods in the intervals of attacks, I feel certain that this child has had malaria, probably in one of the atypical forms. The rash noted on the two occasions mentioned quite probably was due to the taking of one of the food items to which she was sensitive, at the same time the attacks occurred.

These rather atypical types of malaria are not nearly so infrequent as one would imagine them to be, and I have myself seen them a few times in the past few years.

Closing Discussion by Dr. Geo. B. Lake, Chicago

This is a case the enthusiastic allergists would claim without hesitation, and properly so, perhaps. But what is allergy?

Haseltine* and his group of workers claim that it is one of the manifestations of a rather long-continued and severe toxicosis, resulting from perverted metabolism or absorption from toxic foci or both: And their clinical results support their theory.

That there is possibly an endocrine factor in this case, is suggested by the unusual size of the child at birth. This is worth investigating with great care. It is also possible that an intracranial birth injury may play a part, as suggested by Dr. Schneider, but I do not believe that this is the most important feature of the case.

Dr. Sherry's call for more particularized examination (or, at least, for a full report of the measures undertaken) is to the point, but I cannot feel that any acute infection is at the bottom of these symptoms. They have persisted too long (six years) and seem to me to point in another direction.

Dr. Kooiker comes nearer than the other discussants to my idea of this case. The picture is almost typically that of the premigranous condition, cyclic vomiting, which he discusses adequately. But here, again, we encounter allergy, for the allergists include migraine in their province, and some of them say that it is most frequently produced by eating chocolate.

My diagnosis is: A profound metabolic disturbance, probably having hereditary, and possibly endocrine, factors, resulting in general systemic toxicosis with incompletely elaborated or perverted end-products and possibly complicated by absorption from foci of infection.

The first step in treatment should be a painstaking search for and removal of localized infections. Along with this should go a careful and intensive study of the body chemistry, the endocrines and the psychic factors in the case.

The chemical studies should include repeated, quantitative urinalyses, carried out along the lines suggested by Clifford Mitchell in the Symposium on Asthma, already cited, and careful estimation of the chemical and cytologic pictures of the blood.

On the basis of the findings of the examinations, which will, I feel sure, reveal a general systemic toxicosis, a regime of thorough detoxication should be undertaken, as outlined by La Forge in the Symposium twice referred to. These references to a symposium on asthma are *not* out of place, for asthma and migraine (cyclic vomiting) are both allergic disorders which, according to the Haseltine group, are amenable to the same type of general treatment.

In addition to the detoxication, this patient's diet must be carefully regulated and supervised, in accordance with the findings; she will probably need some intelligent organotherapeutic treatment; and quite possibly there will prove to be psychic factors in her environment which may call for a thorough education of her family and associates and a more or less drastic alteration

*Symposium on Asthma. *Med. J. and Rec.*, Nov. 6 and 20, 1929.

in their attitude toward and relations with the patient.

Problem No. 1—1933—(Surgical)
Presented by Dr. Max Thorek, Chicago

H. S.; female; housewife; 45 years old, entered the American Hospital Oct. 5, 1932, complaining of: (1) abdominal pain; (2) backache; (3) constipation; (4) pain in the left lumbar region.

The patient stated that she had not been feeling well for the past two years, having suffered a good deal of cramp-like pain in the left lumbar region, associated with micturition. Menstruation has been irregular since August, 1931, and she has been experiencing "hot flashes" and other nervous manifestations of the climacteric. In January, 1932, she entered a hospital for observation where, after several weeks, she was discharged with a diagnosis of "nervous stomach."

Present Illness: She became acutely ill four days previous to admission, when she developed excruciating pain in the left lumbar region, radiating to the abdomen and down to the left iliac region. She became nauseated and vomited several times. She took some cathartics and, as she did not have any bowel movements, took several enemas, which did not give her any relief, the injected solutions returning clear.

Physical Examination revealed a patient who seemed to be acutely ill and was complaining of constant pain in the abdomen. Chest examination revealed diffuse rales over both lungs. No dullness was present; no fever; heart, normal.

The abdomen was markedly distended and tender throughout and there was marked tenderness in the left lumbar region. There was also a large, smooth, resistant mass in the cul-de-sac of Douglas, which could not be displaced upward nor laterally, was painful on pressure and pressed against the rectum. The uterus could not be mapped out.

Her *urine* showed albumin, one-plus, and a few pus and red blood cells. The differential blood-cell count was normal and the Wassermann test negative.

Requirements: What is the probable diagnosis and indicated treatment?

Doctor and Patient

The advance in medical science, together with the specialization it has developed, has tended toward a depersonalization of the practice of medicine and toward concentrating attention on the disease rather than upon the patient.

In the meantime, psychiatry has been steadily advancing its understanding and treatment of the neuroses. With this progress there has been an increasing appreciation of the importance of the doctor-patient relationship in the prevention and treatment of the neuroses and of the neurotic concomitants of organic disease.

It is now well established that, in the relationship which exists whenever a patient reposes confidence in his physician, there are large potentialities for good, but that, in common with other potent agencies, the doctor's influence on his patient may result in harm if misused. The physician who carries his patient through serious physical illness without psychic damage, who practices a form of "preventive psychiatry" by which mental upsets are avoided, or who successfully helps his neurotic patients to understand themselves, is making the best use of the relationship on which the psychiatrist depends for his expert psychotherapy. The physician, however, who provokes the onset of serious neuroses by ill-considered observations or who leads his patient into an unprofessional relationship by the nature of his psychotherapy, is productive of much harm to his patients.—Editorial in J.A.M.A., Aug. 13, 1932.

CLINICAL · NOTES
AND
PRACTICAL · SUGGESTIONS

Shortening Illness

THERE is a phase of Army medical life which is essentially applicable to the civilian practice of medicine, but which is commonly overlooked by the physician who is interested mainly in the clinical aspect of medical practice. The basic duty of the army surgeon is to maintain, in the highest possible degree, the percentage of effectuals in the service. As quickly as is possible, consistent with the health of the patient, the diseased or wounded soldier must be returned to active duty.

The civilian doctor is largely interested in the pathologic or scientific side of his case; or, in too many instances, in the financial remuneration which he expects to obtain from his patient, irrespective of the economic loss which the illness devolves upon the community at large.

The doctor must provide for himself and his family. That is as much his duty as it is of any other business man. But there is a higher aspect which he must consider. As guardian of the public health he must return his patient as promptly as possible to such a physical condition that he, in turn, may provide for his family and at the same time render his full duty to his community and to the nation at large. The highest and broadest interpretation of the principles of the Hippocratic oath demands this. The shortening of the duration of the illness necessarily lessens the amount of pay which the physician can demand for his services, but it increases, at the same time, the sum of the effectual population of the nation, and thereby adds to the potential wealth of the people.

With such a principle as his basis of medical practice, the doctor at once takes his stand as a patriot of the first water. Not only is he working to the best advantage of his patient, but he is contributing his share to the welfare of the nation. Like the army surgeon, he is maintaining the highest possible number of national effectuals.

There is much to be said in support of the Oriental custom of paying the physician to maintain his patient in a condition of good health, his salary to stop when the patient is ill. In the long run, that is the true interpretation of the Hippocratic oath —and this will be, beyond question, the natural and ultimate outcome of the present trend of medical practice in this country, if not in the world.

We regret to admit that, at present, to the average doctor, this line of thinking may seem idealistic and not practical—for him. In the long run, however, he too will profit, financially as well as morally and physically. His reputation for efficiency of service will spread abroad, and the growing public confidence in him will demand his services with greater frequency than if he

were looked upon as pursuing his professional work in the narrower and more selfish manner only. This is a natural and inevitable reaction, which will tend to increase his remuneration.

W. A. NEWMAN DORLAND, M.D.,
Chicago, Ill.

Tuberculosis an Abstraction*

IN ordinary scientific parlance we say that the tubercle bacillus is the cause of tuberculosis. Is it? What is tuberculosis? The host is just as necessary to the pathologic picture as the tubercle bacillus itself. The host and the guest are purely reciprocals in the socalled disease. The disease, as such, is a pure abstraction. For tuberculosis to exist, the tubercle bacillus must find its complement in the general status quo. This is so self-evident that one feels somewhat silly in calling attention to the fact, and yet, the general partnership is so often forgotten that the disease takes on a sort of circumscribed and concretized existence, with the tubercle bacillus as the etiologic factor in the situation.

Tuberulosis is not a thing running at large. It is a *relation*, pure and simple. In the general combination known as tuberculosis the guest and the host are the real active agents, but even this is only relatively true. In the general picture of tuberculosis neither guest nor host can exist without the other.

In our scientific habit of pairing off agencies in the interest of our pet conception of causation, we tend to forget the purely relative nature of the affair and deal with the respective correlates as though they were concrete, independent entities. "Huh," says our scientist from Missouri, "don't we isolate the germ?" But, as an isolated germ it is not a tubercle bacillus, except in mere name. Cause and effect lose their significance in the general maelstrom of strife as found in the tuberculous picture. In order that the bacillus may exist as an etiologic factor in tuberculosis, the struggle between it and the host must be the order of the day.

J. ALLEN GILBERT, Ph.D., M.D.,
Portland, Oregon.

*Abstracted from *The Medical Herald*, November, 1932.

Sex Control

IN CLIN. MED. AND SURG. for November, 1932, page 816, Dr. J. S. Meyer offers "proof" of the Dawson theory of sex control, by mentioning five specific cases, in two of which the children were born two weeks before the expected time and in one two weeks after, in order to make the theory hold water. This may be "proof" to some people!

Dr. Meyer says this method is applicable in "normal" women only. How many "normal" women are there? Menstruation is often a day or two or more ahead of or behind the schedule and is often prolonged. Healthy women sometimes menstruate once or twice after conception, and occasionally during the entire pregnancy. Some begin to menstruate a month or two after childbirth and some go a year or longer with no flow. I have known a few women who had four or five children and never menstruated since they married.

The whole thing seems very complicated and uncertain, and the number and variety of the theories which have been propounded and defended suggests that nobody has yet found the answer to the great question, "Will it be a boy or a girl?"

J. A. BURNETT, M.D.,
Waldron, Ark.

Seven Wonders of Medicine

1.—Immunity.
2.—Anesthesia and Analgesia.
3.—Asepsis and Antisepsis.
4.—Knowledge of Food Values.
5.—Knowledge of Light and Ventilation.
6.—Organotherapy.
7.—Periodic Health Examinations.

(List suggested by Dr. Bowman C. Crowell, of Chicago, before the Am. Coll. of Surgeons).

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[If these are the seven wonders of modern medicine (and their claims to be so considered seem soundly based), it behooves *every physician* to be at least reasonably familiar with their theoretical and practical implications and applications. Those who are not thus equipped will be wise to make a definite plan of daily study which will familiarize them with these matters within as short a time as possible. —ED.]

THUMBNAIL · THERAPEUTICS

Treatment of Common Colds with Vaccines

I am convinced, from my own personal experience, and from my clinical experience with this method, that vaccine therapy offers the most promising results in both immunization and treatment of the common cold.

In producing immunization, I prefer a stock vaccine containing the influenza bacillus, pneumococcus, streptococcus, micrococcus catarrhalis and staphylococcus. The inoculations should be given twice a year, in the early spring and the early fall. Each course consists of six treatments, at intervals varying from three days to a week. It is well to start with a small dose (0.2 cc.), which in some cases may be increased to as much as 2.5 cc. The dose should always approximate the patient's limit of tolerance to the vaccine.

In treatment of colds that are fully developed, I believe that the autogenous is preferable to the stock vaccine. The cultures should be made from the secretions of the nose, throat and mouth. The vaccine should be administered as early as possible and in much larger and more frequently repeated doses, guided by the patient's tolerance.—Dr. W. W. Carter, of New York, in *Med. Times and Long Island M. J.*, May, 1932.

Hemophilia Treated with Ovarian Extract

In a case of hemophilia, a prolonged period of spontaneous bleeding was terminated by intramuscular injections of ovarian extract ("Azule," prepared by Allen & Hanbury, London). The amount given was 4 grains, begun immediately and continued at intervals of 6 hours until bleeding stopped, and then at intervals of 24 hours.

Experiments were carried out to determine the effects of various doses of ovarian extract on the coagulability of the blood. The data obtained provided information of possible value in developing standard methods for prevention and treatment of persistent bleeding in this disease—bleeding that occurs from either accidental or surgical wounds.—Drs. H. T. Kimm and C. M. Van Allen, Peiping, China, in *J. A. M. A.*, Sept. 17, 1932.

Antitoxic Immunity from Administration of Toxin by Mouth

Experiments have shown that the ingestion of sterile scarlet fever toxin, by individuals susceptible to scarlet fever, may stimulate the body to produce the corresponding antitoxin in amounts sufficient to change a positive skin reaction to a negative one. Toxin administered by mouth is less efficient than the same toxin injected subcutaneously.—Drs. G. F. Dick and Gladys H. Dick, of Chicago, in *J.A.M.A.*, Apr. 23, 1932.

Is Vitamin B a Preventive of Dental Caries?

When the diet of experimental animals contained sufficient acid to attack the dental enamel and produce caries, the presence of a supply of vitamin B in the diet apparently played the part of a defensive mechanism. — Minerva Kellogg, M.S. and W. H. Eddy, Ph.D., of New York, in *Dent. Cosmos*, Apr., 1932.

Suprarenal Cortex in Vomiting of Pregnancy

In 6 cases of severe nausea and vomiting in the first trimester of pregnancy, marked success was obtained by the administration of 6 gr. (0.4 Gm.) t.i.d., of desiccated suprarenal cortex.—Dr. W. N. Kemp, of Vancouver, B. C., in *Endocrinology*, July-Aug., 1932.

Current · Medical · Literature

Management of Simple Infections of the Nose and Throat

In *Eye, Ear, Nose and Throat Monthly*, July, 1932, I. W. Voorhees, of New York City, states that for many years he has advocated a certain systematic or sequential order of management, which will bear repetition because it is reasonable, harmless, and, finally, because it works.

The principles are about as follows:

1.—Put the patient to bed, if possible. Give a cathartic, a semi-fluid diet and much liquid—lemonade, orange juice, alkaline waters, etc.—so that several quarts are ingested during twenty-four hours.

2.—Get the nose open. Formerly, adrenalin (epinephrin) was much used for this purpose, especially in oil, but the reaction to this was, in some cases, very undesirable and undid much of the good that was so instantly accomplished. We now have a better ally—ephedrine.

3.—The nose is now free and we must remove debris (muco-pus), by irrigation, suction, blowing or wiping.

4.—Finally, we must try to destroy the bacteria, not only those on the surface but those at work in the submucosa. This can be accomplished by the strong and mild silver proteins.

5.—Set the interval so that the patient shall neither be undertreated nor overtreated. This will be determined by the general response in each individual case, and is a matter of experience.

Value of Amniotin and Theelin in the Menopause

In *Am. J. Obstet. & Gynec.*, May, 1932, Drs. S. H. Geist and F. Spielman, of New York, report a series of cases of menopausal functional disturbances in which the value of the hormonal preparations Amniotin and Theelin was tested.

Regarding the value of Amniotin, following its use in 43 cases, the authors say that, in one group of cases, it seems to have influenced a return of the menstrual period with a temporary relief of symptoms; in other cases it caused a distinct alleviation of symptoms while the substance was exhibited, but the relief was not of a permanent nature. What influence the psychic effect of the treatment played is hard to evaluate. However, it is evident that the substitution of a single hormone, that is not being produced by the individual, is not sufficient to prevent entirely the symptoms of the menopause, and it is certain that other factors are included in the problem of the menopause and its associated symptoms. However, in comparison with the other therapeutic agents at this clinic, which has been in operation for seven years, Amniotin is distinctly superior.

In regard to Theelin, tried in 31 cases, of which 25 were menopausal, 7 of these latter were definitely improved, 3 with reestablishment of menstruation. The others were either unimproved or so slightly improved as to be negligible. Three (3) of 4 amenorrheic patients were unaffected, as far as return of menstruation was concerned. The fourth bled convincingly, probably attributable to the material used.

In several cases of natural menopause, bleeding, possibly menstruation, followed the injection of Theelin. The natural menopause seems to be more amenable to treatment than the artificial climax.

Bismarsen in the Treatment of Congenital Syphilis

In *Arch. Dermat. & Syphil.*, June, 1932, Drs. S. O. Chambers and G. F. Koetter, of Los Angeles, report that, in the Department of Dermatology and Syphilology of the Children's Hospital of that City, Bismarsen (bismuth arsphenamine sulphonate) was placed, in Sept., 1928, as the sole agent in the treatment of congenital syphilis.

A group of 180 children and infants has been observed for periods varying from 1½ to 2½ years. In those with a fixed Wassermann reaction, complete reversal occurred in 51 percent; 8 percent showed signs of ultimate reversal; in 41 percent the reaction was unchanged. Serologic relapses were few and the clinical improvements were very noteworthy.

In their summary, the authors conclude that apparent therapeutic effectiveness, combined with the qualities of simplicity of administration and lack of toxicity, should place Bismarsen among the antisyphilitic remedies of choice in the treatment for congenital syphilis. Children undergo Bismarsen therapy with little or no complaint, which is in vivid contrast to intravenous therapy in this same group. Certainty of dosage, in comparison with older mercurial inunction methods, is an added advantage. Local reaction is diminished to the level of comfort, provided the methods of filtration and injection described are utilized, and does not represent an objection to its use. Relapse, clinical or serologic, cannot be determined in so short a period of observation. It is the authors' intention to continue observation and treatment of this same group for years to come. The effect of the drug on interstitial keratitis is extremely satisfy-

ing, which is certainly an important consideration. Dosage limitations would appear to be correctly established.

Two injections a week are advised, in courses of twenty, with rest intervals of two weeks and a total of three courses. The serologic record is gratifying, and the lack of toxicity emphasizes safety in general hands. The authors' high percentage of reversals in Wassermann-fast syphilis is not taken with any degree of conclusiveness, for permanence cannot be judged as yet.

The authors sincerely believe that Bismarsen has shown itself equal to the demands that they first outlined for its future. Its proper utilization should break down those barriers that have heretofore stood in the path of efficient and adequate treatment for the syphilitic infant and child.

The Ophthalmic Test for Sensitivity to Horse Serum

The intradermal test for sensitivity to horse serum has never been completely satisfactory. In *J.A.M.A.*, May 14, 1932, Dr. Louie N. Claiborn, of New Haven, Conn., states that the ophthalmic test is less sensitive but of more value as a clinical test of susceptibility to serum reactions than the intradermal test.

For the ophthalmic test, one drop of (tetanus) antitoxin is instilled into the conjunctival sac of one eye. The test is read after 15 minutes, the other eye serving as a control. The positive reactions vary from a slight injection of the conjunctival vessels to a marked conjunctival reddening. When the test is markedly positive, the patient usually complains of some burning and itching in the eye. The ophthalmic reactions usually subside entirely in from one-half to two hours. In all cases in which the ophthalmic test was positive, the intradermal test was also positive.

Intradermal Test for Malignant Disease

Since the cure of cancer now depends for its success almost entirely upon early diagnosis, the discovery of specific tests for malignant tumors is of immense importance.

The *J. Lab. and Clin. M.*, for Sept., 1932, contains an article along this line by Dr. B. Gruskin, of Philadelphia, which may prove to be of vital importance to the entire medical profession.

The embryonic character of cancer cells has long been recognized, and immature tissue cells have been used, for diagnosis and therapy, without conspicuous success. Dr. Gruskin thinks that this may be because the workers have overlooked *tissue specificity* — carcinoma, being an epithelial tumor, will not respond to embryonic tissue which contains connective tissue; and vice versa in the case of sarcoma.

In preparing his antigen of epithelial tissues, Dr. Gruskin uses the pancreas and submaxillary glands (sometimes the liver) of embryonic calves, sheep and pigs, not older than the second intrauterine month, worked up with painstaking care. For the connective tissue antigen (for sarcoma) he employs Wharton's jelly and bone marrow, mixed.

The test is made by injecting 0.2 cc. of the antigen for the suspected condition, intradermally and slowly, with a very fine needle. If positive, a small inflammatory area, with pseudopods (resembling any other sensitivity reaction), will appear within 15 minutes.

This test cannot be made properly in very emaciated patients with a paper-like skin, and should not be made upon those showing septic temperatures or jaundice, nor soon after x-ray or radium treatments or anesthesia.

In the 62 cases reported in detail, these tests were definitely specific (both positive and negative) in all except three. Of these, one case of chronic cystic mastitis gave a positive reaction; one case of early Hodgkin's disease (assuming that this is a malignant condition) gave a negative reaction; and one positive reaction for carcinoma was found in a condition which, while not definitely malignant, was suspected of being carcinoma of the vagina.

Of 116 supposedly normal persons, tested as controls, 107 gave no reactions, while 9 were mildly positive. Upon careful inquiry it was found that there was a family history of malignant disease in all of these latter cases.

Oral Vaccination

Many attempts have been made in bygone days to obtain immunity against or cure of disease by oral vaccination methods of different kinds. In *Illionis M. J.*, April, 1932, Drs. I. G. Finder and J. Simons, of Chicago, review the history of these attempts, especially against infections of the typhoid-paratyphoid type and dysentery. The authors then report their own personal experimental and clinical investigations.

The general underlying conception in this work is that the contents of the lumen of the gastro-intestinal tract have a definite acid-base balance and a relatively constant bacterial flora for the various zones or levels in the normal animal, including man. The digestive ferments are secreted into the lumen of the alimentary tract at various levels, and hydrolysis of sugars, fats and proteins takes place within this hollow tube. Substances ingested by mouth are broken up by ferment action into smaller molecules before absorption takes place. The whole problem of oral vaccination resolves itself into a method of preventing hydrolysis of the antigen within the lumen of the gastro-intestinal tract and insuring absorption of the unchanged bacterial proteins.

The authors think this can be done by using bile as a vehicle. Besredka considers the action of bile as a local solvent of mucus and a desquamating agent. This introduces a mechanical factor. The antigen administered after bile would then get into the body through the desquamated areas in the wall of the intestinal tract. If this were true, it would be difficult to understand how one gram of desiccated ox-bile in 100 cc. of water can produce such a change in the wall of the intestine, when a higher concentration of bile is secreted into the duodenum in much

larger volumes during the course of the day. The regurgitation of bile from the duodenum into the stomach seems to be a physiologic process when the gastric acidity reaches a certain concentration. The presence of bile in contact with the gastric mucosa is probably a physiologic method of inhibiting further acid secretion. The duodenal contents may, not only neutralize the excess acidity, but the bile can act by inhibiting acid secretion.

The authors have presented evidence tending to show that bile placed in the post-digestive stomach is not associated with a response of this organ in secreting acid. The stimulation of the stomach by the oral ingestion of a protein can be inhibited by administering bile in certain dilutions before the protein is ingested. There is a period of approximately two hours, after the ingestion of bile into a fasting stomach, when an antigenic substance can be passed through the stomach without exciting acid secretion.

The authors' conception of the mechanism of oral vaccination, by using bile, is based upon a different principle from that suggested by Besredka. They consider the mechanism, not as a mechanical desquamating agent, which thereby increases the probability of absorption of the the antigen through the injured mucosa, but as a physiologic process. The normal stomach, during the post-digestive period (8 to 12 hours after a meal), does not have 100 cc. of a 1-percent bile solution suddenly placed within its lumen. Many have emphasized the part played by regurgitation of the duodenal contents into the stomach during digestion. When a solution of bile is suddenly brought in contact with the empty, resting stomach during a post-digestive period, the fasting acid secretion is inhibited and this is followed by a period of diminished secretion. During this time interval, an antigen can be passed unchanged through the gastric lumen into the duodenum. The acid-base balance of the duodenum will be shifted toward the alkaline side and it has been shown that this was the best intra-intestinal reaction for passage of bacteria and dissolved protein through the wall of the intestinal tract.

The authors' experimental and clinical observations have supported their opinions as here expressed.

Regurgitation Renal Colic

In *Urol. & Cutan. Rev.*, June, 1932, Dr. Bransford Lewis, of St. Louis, on the basis of his personal experience in a series of cases of severe renal colic, ascribes the cause to regurgitation of the urine to the ureters and kidney pelves, owing to some fibrotic or other obstruction at the neck of the bladder.

The majority of cases of renal colic are attributed to ureteral calculi, but investigation fails to find a stone. In such cases the causes mentioned above will generally be found present and, since a moderate amount of intravesical pressure suffices to force the resistance of ureteral valvular orifices, regurgitation is permitted. Catheterization of the bladder and dilatation of the bladder neck has been found to afford fairly permanent relief from symptoms in almost all cases.

Mucin Therapy for Peptic Ulcer

In *J.A.M.A.*, July 9, 1932, Dr. C. F. G. Brown and associates, of Chicago, submit a preliminary report of objective results on patients with intractable peptic ulcer treated with mucin.

Thirty-six (36) out of 37 patients who had partial to complete disability on previous strict ulcer management, have been relieved objectively and subjectively by mucin.

Roentgenographed deformities in topography were influenced more by administration of mucin than by former management.

Emptying time or retention was diminished on mucin treatment. The authors do not consider that they have sufficient evidence to make a comparative statement at this time.

Disappearance of gross and occult blood in stomach and stools was more rapid with mucin treatment than with conventional management.

Mucin treatment was effective in controlling several massive hemorrhages from the stomach. Other methods were also effective.

There have been no recurrences in 36 patients who had frequent previous recurrences.

Hyperacidity, as measured by weekly Ewald test meals, was not lowered on the treatment of hourly feedings and powders and was only somewhat lowered by mucin treatment. All the patients were taken off powders or mucin and food twelve hours previous to the test meal.

Mucin in ordinary doses did not lower gastric acidity appreciably when placed in the stomach after a two hour fractional meal, followed by aspirations at frequent intervals for four to seven hours. In the mucin used the authors did not observe any secretogogue action which interfered with the beneficial effect. From objective observations, the therapeutic effect is due to some factor other than neutralization of acid.

The quality of commercial mucin has been improving, as the result of the cooperation of the makers with Drs. Ivy and Fogelson. A histamine-like substance is, no doubt, present in varying quantities, as it is present in other tissue extracts, such as liver extract. This is now controlled by chemical and biologic assay. The authors have seen no toxemias. There has been a notable increase in the feeling of well-being and an improvement in the appearance and behavior of the mucin-treated patients.

Mucin has a beneficial effect on the bowel.

There was one failure; at operation, a red, granulomatous tumor mass was found, having formed about an ulcer of penetrating type. Gastro-enterostomy was done. Distress persisted with alkalis for six weeks and then subsided with mucin; this may have been due, of course, to functional improvement of enterostomy at this time.

The authors have found in the past that a majority of peptic ulcers heal with no treatment or any treatment. The minority are sometimes very resistant to the best forms of management. Mucin has helped these intractable cases. The authors realize that any local palliative treatment does not, in itself, change the constitution nor the vegetative nervous system of the patient who is an ulcer-bearing individual.

NEW · BOOKS

Education is the development of the capacities of the individual, and the setting of the individual in intelligent and harmonious relationship with his environment.—JAMES H. COUSINS.

Medical Care

MEDICAL CARE FOR THE AMERICAN PEOPLE. *The Final Report of the Committee on the Costs of Medical Care, Adopted October 31, 1932. Chicago: The University of Chicago Press. 1932. Price $1.50.*

The medical profession has been aware for some time that a committee was studying the costs of medical care, as abstracts of the reports of the fact-finders have been distributed and commented upon in the medical journals. This is the final report and recommendations of the Committee, based upon five years of study of the question.

As a critical comment upon this publication appears in the Editorial columns of this issue, this review will merely state what the book contains.

The volume consists of an introduction and six chapters, plus two minority reports and two personal statements, with an index.

Chapter I outlines the present situation and states the nature of the problem. In very brief compass, it gives the highlights from the Committee's twenty-six fact-finding studies.

Chapter II enunciates the essential elements of a satisfactory medical program and discusses the three major lines of approach to such a program.

Chapter III translates these policies into terms of organization and administration. It presents the Committee's concept of an ultimate objective.

Chapter IV depicts the most significant plans and experiments now under way. The advantages and disadvantages of each of them are briefly summarized.

Chapter V gives the Committee's specific recommendations. There are five broad recommendations and under each of these are listed specific measures for putting it into effect. Some of the specific measures are less general in application than others. A thorough understanding of them requires some familiarity with Chapters II, III and IV.

Chapter VI presents the need for action and some practical immediate steps.

Succinctly, the majority report recommends, in rather hazy and sometimes contradictory language, the socialization of medical practice, basing this suggestion upon data which appear to have been selected largely with the idea of backing up a preconceived tendency in that direction, in the face of the fact that, where such measures have been tried in the past, they have failed.

The first minority report, which, with the second such report, was signed by a *majority* of the men supposed to represent general practice, occupies 32 pages and is worth reading in its entirety, as it shows clearly the fallacies and errors in the majority report and gives a basis upon which non-socialistic physicians can unite to secure their freedom from bureaucracy— if it is not already too late to do so.

It is interesting to note that this first minority report recommends two procedures which have been steadily recommended by this journal: The treatment of chronic diseases on a flat-rate basis and the development of plans for medical care by the County and State Medical Societies.

As it seems probable that the recommendations of this Committee may have far-reaching effects upon the future of medical practice, it behooves every medical man to familiarize himself with the contents of this report, so that he can discuss it intelligently with laymen and lay plans for his own salvation.

Clio Medica Series of Primers on Medical History

CLIO MEDICA; A Series of Primers on the History of Medicine. *Editor: E. B. Krumbhaar, M.D. New York: Paul B. Hoeber, Inc. Price $1.50 per volume.*

The *Clio Medica* series (Clio was the Greek muse of history), of which some volumes have already appeared, aims at presenting, in a concise, readable and inexpensive form, a number of special phases of the long and complex history of medicine, with which every physician ought to be reasonably familiar. The small size of the books makes it convenient to carry them easily; a few spare minutes can be profitably and pleasantly utilized in making oneself familiar, or renewing acquaintanceship, with the great stories of medical progress throughout the ages, presented here by men who are thoroughly competent to relate them:

FULTON: PHYSIOLOGY

PHYSIOLOGY. *By John F. Fulton, M.D., Sterling Professor of Physiology, Yale University Illustrated. 1931.*

The author begins his historical synopsis of physiology with the notions of Aristotle and

Galen on this subject; skips over the dark ages; plunges at once into Harvey and the circulation; and gives a rapid resumé of the physiologic advances of the nineteenth and twentieth centuries.

Castiglioni: Italian Medicine

Italian Medicine. By *Arturo Castiglioni, M.D., Professor of the History of Medicine, Royal University of Padua, Italy. Translated By E. B. Krumbhaar, M.D., Professor of Pathology, University of Pennsylvania.* With 11 *Illustrations.* 1932.

Italian Medicine is considered by the author to begin with the establishment of the Southern Italian schools, especially Salerus, in the early centuries of the middle ages. The anatomic discoveries and advances made in the great Italian universities by Mondino, Vesalius, Fallopius, Malphis, and others are reviewed. These universities have been centers of medical culture, progress and inspiration during all succeeding ages, down to the present time. Only a sketch outline of the importance of Italy in Medicine can be given in this short monograph, but it is interesting and important information.

Stone: Medicine Among the American Indians

Medicine Among the American Indians. *By Eric Stone, M.D., Providence, R.I.* With 17 *Illustrations.* 1932.

The author shows that the high degree of culture displayed by the more advanced tribes of American Indians, in many directions, is equalled by their medical knowledge. The medicine man of the Indians was not merely a grotesque figure, but he possessed certain therapeutic knowledge, some of which has passed into accepted, civilized medical practice. The significance of certain Indian ceremonial dances is described. Some of the medical practices of the American Indian, living in the practical equivalent of the Stone Age, were in advance of the civilized practice of their day and age.

Coulter: Physical Therapy

Physical Therapy. *By John S. Coulter, M.D., Assistant Professor of Physical Therapy, Northwestern University Medical School, Chicago.* With 15 *Illustrations.* 1932.

Therapeutic gymnastics formed an important part of ancient Grecian and Roman medicine, declined with the introduction of Christianity, and was not revived until the diffusion of the Old Greek culture again in Europe, in the fifteenth century.

The author sketches the balneotherapy, massage and medical exercises, as developed in Europe from the sixteenth century; also the introduction of electrical therapeutics and radiant energy. Readers engaged in physical therapy will find here most interesting details of former practices and that much which is now considered new is, in reality, old.

The books of this series, which are well printed and attractively bound, are small enough to carry in the pocket easily, for reading during otherwise vacant minutes, and, if so used, will add to that background of culture which should be the proud possession of every physician, and their low cost puts them within the reach of all.

Buckstein: Disorders of the Colon

Functional Disorders of the Large Intestine and their Treatment. *By Jacob Buckstein, M.D., Instructor in Gastrointestinal Roentgenology, Cornell University Medical College; Alimentary Tract Division, Roentgen Department, Bellevue Hospital; etc.* With 60 *Drawings in the Text and 40 Reproductions of Radiographs. Harper's Medical Monographs. New York and London: Harper & Brothers.* 1932. $3.00.

This monograph is a careful study of the common functional disturbances of the colon. In the majority of patients, seeking relief of symptoms of abdominal distress, no organic lesion can be found, but rather a derangement of functional behavior in some part of the gastrointestinal tract. These derangements, of which constipation, functional hypermotility and gaseous distension of the large bowel are the most common, are discussed in the 12 chapters making up the book. The author's wide experience of over 30,000 such cases in the Bellevue Hospital, New York, gives his teaching a special value from the clinical aspect, especially as there are numerous roentgenographic illustrations of many of these cases.

This is a practical work, particularly suited to the needs of the general practitioner, whose practice, to a great extent, must contain many patients suffering from these disabilities, who can be helped only by expert and efficient treatment, based on a correct appreciation of the underlying causes.

Crossen and Crossen: Gynecology

Synopsis of Gynecology; Based on the textbook, "Diseases of Women." *By Harry Sturgeon Crossen, M.D., F.A.C.S., Professor of Clinical Gynecology, Washington University Medical School, Gynecologist in Chief to the Barnes Hospital and the Washington University Dispensary; etc., and Robert James Crossen, M.D., Instructor in Clinical Gynecology and Obstetrics, Washington University School of Medicine; etc.* 110 *Illustrations. St. Louis: The C. V. Mosby Company.* 1932. $2.75.

This synopsis of gynecology is intended primarily for students who elect to follow the general practice of medicine and who, for this purpose, should be acquainted with the general principles and salient features of gynecology to round out their medical education and enable them to treat women patients in an intelligent way. For this purpose the synopsis is very practical, concise and sufficiently inclusive, being based on the extensive gynecologic practice of the senior author.

The larger and more detailed textbooks of gynecology are available to students who desire to specialize in this line of work.

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